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The Commonwealth of Massachusetts

ANNUAL REPORT

OF THE

Division of Fisheries and Game

FOR THE

YEAR ENDING NOVEMBER 30, 1925

*Mass. DEPARTMENT OF CONSERVATION: Division of
fisheries and game*



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STATE HOUSE, BOSTON CONTENTS

	PAGE
General Considerations	3
Personnel	5
Finances	5
Conferences within the State	6
Activities outside the State	6
Acknowledgments	7
Enforcement of Laws	8
New Legislation	10
Education and Publicity	10
Biological Department	11
Wild Birds and Animals	12
Winter Feeding	12
Breeding Season	12
Fires	12
Posted Land	12
Migratory Birds	12
Song and Insectivorous Birds	12
Migratory Game Birds	13
Migratory Non-game Birds — Gulls and Terns	14
Federal Control of Migratory Birds	14
Upland Game	15
The Hunting Season	15
Pheasant	15
Ruffed Grouse	15
Quail	16
Deer	16
Squirrels	17
Hares and Rabbits	17
Fur-bearing Animals	17
Enemies to Game	17
Reservations	18
Martha's Vineyard Reservation	18
Myles Standish State Forest	20
Penikese Island Sanctuary	20
Henry Cabot Lodge Bird Sanctuary (Egg Rock)	21
Isaac Sprague Bird Sanctuary (Carr Island)	21
Ram Island Sanctuary	22
Mount Watatic Sanctuary	22
Knight Bird Refuge (Milk Island)	22
Reservations under Sections 69-75, Chapter 131, General Laws	22
Inland Fisheries	23
General	23
Trout	23
Chinook Salmon	23
Pike Perch	23
Winter Fishing and Pickerel	24
Bass	24
White Perch	24
Smelt	24
Horned Pout and Catfish	24
Ponds	25
Fishways	26
Pollution	30

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1925
B

Propagation of Fish and Game	30
Fish Hatcheries and Game Farms	30
Field Propagation	37
Fish and Game Distribution	38
Marine Fisheries	42
Inspection of Fish	42
Commercial Fisheries Conference	46
The Deep Sea Fisheries	46
Shore Fisheries	54
The Lobster Fishery	54
Bounties on Seals	54
Mollusk Fisheries	54
Alewife	55
Appendix	57

The Commonwealth of Massachusetts

The Director of Fisheries and Game herewith presents the sixtieth annual report.

GENERAL CONSIDERATIONS

When making the annual survey of wild life conditions in a given State it has been customary to report on the status and future possibilities of growth of the stock located within the boundaries of that particular State, giving little consideration to the national and international aspects of the problem, or the interdependence of the several States as bearing on the net result.

There is no State in the Union which can practice this policy of isolation without endangering the welfare of the residents of that State for many generations to come. This is particularly true of Massachusetts. Ours is a small State with a great population. Its remotest sections are now accessible with good roads. The collective affairs of civilization have so dismantled its forests, polluted its waters, and rendered sterile large areas upon which formerly the big game animals of the country roamed at will, that no longer can it be classed as a big game State.

The fact that the moose, panther, black bear, wild turkey, and other species can not abide here has not caused our people to lose interest in these species wherever found. There are still regions in the country sufficiently untouched by man, so that if a portion of them can be set aside as National or State ranges, practically all existing species of our big game and the larger game birds can not only be preserved from extinction, but increased in numbers to the point where they will continue to supply a fair volume of sport as well as being always available for inspection and study by those who do not care to hunt. These regions lie mostly west of the Mississippi River. The Federal government has taken steps to cause certain wild life sanctuaries to be established; and certain of the Western States have taken similar action on land not under Federal control. But it is not reasonable to expect these Western States, of vast size (as compared to our small State) and with far-flung, sparse populations (compared to the dense population of our State), to bear all of the financial burden of providing and administering such refuges. The departments of the Federal government having to do with wild life conservation are performing a splendid service on behalf of all the people, but the funds at their disposal are totally inadequate. The same is true in those Western States where the remaining unspoiled habitat of the big game is found. Upon looking at this question in the light of the developments of the next hundred years, it is evident that it is of as great concern to the people of our State whether the grizzly bear and the antelope are to become extinct as it is to the people occupying the States where the remnants of these animals are now found. Thousands of our people in years to come will want to see these magnificent animals, and it should be our concern to take part in any activities, national or regional, having to do with the perpetuation and increasing of these species, and to assume our share of the financial burden.

The case of the migratory wild fowl is even more in point. Except for our native black duck we are entirely dependent on what takes place in other States and in Canada as to whether any of these birds will visit our State. When investigations now being made by the Federal government are completed, it will undoubtedly be apparent that Mexico, the Central American and South American States are also inseparably a part of the grand scheme of things. Twice a year we observe the inspiring phenomenon of a great variety of migratory birds drifting over the surface of our State while proceeding to or from the breeding grounds. In some instances we do not know whence they come. All we know is that somewhere, in regions outside of our State, they have tarried during the winter. In the following late summer and fall, clear through to early winter, we observe the return movement. The birds come to us from remote breeding grounds, some of them shrouded in mystery. But whether they come or not depends entirely on what takes place on the breeding and wintering grounds, and we, inside the boundaries of our small State, can do little or nothing to help control or direct the destinies of these birds—except in so far as we may restrain ourselves from taking them while they are within our borders.

We are just beginning to realize that the policies of fifty years ago, which simply sought to bring back the vanishing supply of migratory birds through the expedient of prohibiting the taking of them, has been a mistaken policy. We are just realizing that other factors have been at work far more deadly than the gun. These factors can be grouped under the term "civilization." They have destroyed our forests, drained our swamps, polluted our waters, and settled up the country, resulting in the *permanent* destruction of vast breeding and feeding areas of these migratory birds. Every year sees further encroachments upon the breeding grounds of our native black duck. The same things are occurring in respect to all the other species of wild fowl which come to our State during a given year. By reason of the newness of the country, again it is found that the principal breeding and feeding areas lie in the great States in the north central and western parts. Our duty is to see that these areas are preserved and that others which have been destroyed are restored wherever possible. It is idle to talk of maintaining the present supply of migratory wild life and to build it up, while at the same time sitting idly by and permitting these producing plants to be dismantled and destroyed one after another.

An inspection of the map of North America shows that during the winter these migratory birds concentrate in the narrow strip of country to the north of the southern boundary of the United States. Here in times past they have congregated in unbelievable numbers. But here again the hand of man is against wild life, for the reason that these natural wintering areas are being drained, and the possibilities of the regions for sustaining large concentrations of birds are being rapidly removed. These areas are our natural storage warehouses, in which stay the output of the breeding areas of the preceding summer, and if they are removed, the output from the producing plants will be destroyed. After all is said and done, the maintenance of this national asset calls for the application of fundamental business practices. It is not a matter of sentiment, and there is no mystery surrounding the problem. The people of our State cannot hold aloof from assuming their share of moral and financial responsibility in the application of those business practices. While the work should be under the Federal government in order to make certain of a national basis of action, nevertheless every State must assume its full share of the responsibilities. A pronounced decline in the numbers of birds would most quickly be felt in such purely migratory States as ours. But the final chapter of destruction, if it must come to that, will be written in the States where now the producing plants and storage areas are still to be found. Again it is of as much importance to the people of our State as it is to the residents of Minnesota, North Dakota and South Dakota, Nebraska and Utah that these producing plants be preserved. It is likewise as important to our people as it is to the residents of Louisiana, Arkansas, Florida and South Carolina that the storage areas be preserved.

All that has been said with respect to the big game in the west and migratory birds is equally applicable to many phases of our commercial fisheries. The time

has gone by when each State can content itself with taking the maximum numbers of such fish as annually visit these shores. Long ago Congress appreciated these facts and established Federal agencies to work with the coastal States on both oceans and the Gulf, in order that these fisheries might be at all times considered in their entirety, rather than from the point of view of any one particular region. The life history and migrations should be studied by some central agency within the Federal government, in order to avoid duplication of effort in the several States and to make certain that the most complete survey is made. The same can be said of sanitary methods of controlling, of handling and marketing the products. There is greater need than ever before of joint participation by the several States in all these activities. This should be either under the guidance of the Federal government or through councils in which all States are represented when considering such species in order that their entire range may be under consideration. The foregoing is equally true where the Dominion of Canada is concerned. All of this is immediately apparent when we realize that in our State is located the greatest salt cured fish market in the world, and the largest fresh fish market in the United States — all handling salt-water fish.

PERSONNEL

There were no changes in personnel.

FINANCES

	Appropriations	Expenditures	Balances
For salaries and maintenance	\$203,690 00	\$201,999 08	\$1,690 92
For special purposes	—	—	—
Available from 1924 balances	723 75	721 26	2 49
	<hr/> \$204,413 75	<hr/> \$202,720 34	<hr/> \$1,693 41

Returned to the general treasury \$1,693 41

The revenue turned into the State Treasury was: for license fees (details below), \$169,638.35; rent at hatcheries and game farms, \$181.00; sale of game tags, \$44.00; sales of forfeited goods (guns, \$65.00, pelts, \$11.40), \$76.40; lease of Chilmark Pond, \$75.00; sale of warden's badge, \$1.00; lease of clam flats, \$10.00; sale of gravel, \$2.85; cash overpayment, 25 cents; total, \$170,028.85.

Receipts in Detail of Licenses

	Total Number issued	Gross Value	Fees to Clerks	Net Return to State
Combination licenses	41,777	\$86,946 00	\$10,358 95	\$76,587 05
Hunting licenses	39,272	56,155 00	9,803 80	46,351 20
Fishing licenses	53,924	59,134 00	13,329 00	45,805 00
Lobster licenses	1,095	1,095 00	164 25	930 75
	<hr/> 136,068	<hr/> \$203,330 00	<hr/> \$33,656 00	<hr/> \$169,674 00*
Adjustment of previous overpayments				35 65
				<hr/> \$169,638 35

The enactment of a law eliminating the separate hunting and fishing licenses and substituting a straight sporting license at a slightly larger fee will result in an increase in the amount turned into the State Treasury from this source after January 1, 1926. A two-fold object is accomplished by this law — it not only increases the revenue but also it establishes trapping on a commercial basis, apart from the sporting activities of hunting and fishing.

*The difference of \$35.65 between the total received for licenses above and in the preceding table is due to overpayments previously made and deducted on 1925 remittances.

The sporting licenses will cost: resident, \$2.25; non-resident, \$15.25 (\$5.25 to certain real estate holders, club members and fox hunters); alien, \$15.25. The schedule for the various classes of trapping licenses is the same as above, except that minor trappers will pay 75 cents instead of 25 cents. Also, duplicate licenses will cost 50 cents where formerly they were issued without charge. The greatest increase in cost comes on the fishermen; but this is not an unfair arrangement, for it is a fact that from the establishment of this department in 1865 to date, much more money has been spent on the propagation of fish than on the propagation of game. Between 1909 and 1919, the hunters paid into the Treasury over \$500,000; the fishermen, nothing. From 1920 to 1924, though the hunters paid larger fees than the fishermen, about \$100,000 more was expended on fish production than on game production. The present sporting license promises to more equably divide the burden, and the time has come when the sportsmen themselves realize that if they are to have more sport they must make a larger contribution. While it is true that the license fees are not directly at the disposal of this Division, nevertheless the amount turned in from this source is taken into consideration by the General Court when making appropriations.

It is believed that the proceeds from the sporting licenses should be used to finance the recreational side of the work of this Division, that is to say, what is done for the hunter and the fresh-water angler. The work with the commercial fisheries should be financed either from revenues contributed by the commercial fisheries, or by a direct appropriation out of the general funds. The commercial fisheries have to do with the production of a valuable food supply, and in this respect such appropriation out of the general funds would be in line with the assistance that is now given to agriculture.

The tendency in national and State finances is to make the several departments of the government self-supporting in so far as practicable. The cost of operating the Division may properly be divided into two parts: (1), that which relates to the commercial fisheries; and (2), that which relates to protection and propagation of game and fresh-water fish for sporting purposes.

Offsetting the expenditure of \$16,576* on the commercial fisheries, revenues from such fisheries amounting to \$1,015.75** were turned into the State Treasury. The remaining amount of \$15,560.25 was contributed out of the general tax levy.

Offsetting the sum of \$185,362 spent for the maintenance of the recreational activities, revenues (mostly from hunting and fishing license fees) amounting to \$169,013.10 were turned into the State Treasury, leaving \$16,348.90 contributed out of the general tax levy. In other words, the license fees fell short by the last-named amount of financing the work of the Division on its recreational side.

CONFERENCES WITHIN THE STATE

The regular annual conference with the sporting fraternity, land owners and others interested in wild life was held in Boston on January 14.

With the purpose of bringing about closer relationship between the commercial fisheries interests and this Division, conferences were held on June 12 and July 24 — for account of which see "Marine Fisheries."

ACTIVITIES OUTSIDE THE STATE

The Director has participated in the nation-wide activities for the conservation of fish and game by attendance at the following gatherings:

National Game Conference of the American Game Protective Association December 8-9, 1924, in New York City.

*This sum is arrived at by lumping the following items: expenses of boat, \$253; smelt work, \$265; lobster work, \$710; one-fifth the salaries and operating expenses of the wardens patrolling the shore districts, \$5,087; alewife and fishway work, \$757; inspection of fresh food fish, \$9,504.

**Lease of Chilmark Pond, \$75; lease of clam flats, \$10; fees from lobster licenses, \$930.75.

Annual meeting in Washington December 10 of the Advisory Board to the U. S. Bureau of Biological Survey on the Migratory Bird Law, of which he is a member.

Meeting in Washington December 11-12 of the Advisory Council of the President's National Conference on Outdoor Recreation, of which he is a member.

Conference in Hartford, Conn., March 4, called by the State of Connecticut. This was a gathering of the officials of the New England States having in charge fish and game interests, for the purpose of bringing about uniformity in the lobster laws in New England. The laws are so different in their general effect that it is impossible to obtain the teamwork and standardizations of practices so essential to building up this valuable industry.

The President's National Conference on Outdoor Recreation in Washington, May 28-29. The Director is a member of the Advisory Board, and a member of the permanent committee on game and fur-bearing animals.

Meetings August 17-22 in Denver, Colo., of the American Fisheries Society, the International Association of Game, Fish and Conservation Commissioners, and the Western Association of Game, Fish and Conservation Commissioners. The chief accomplishment was a full discussion of the Game Refuge — Public Shooting Grounds bill, together with the formulation of plans for again presenting it to Congress. (See "Federal Control of Migratory Birds.")

ACKNOWLEDGMENTS

Acknowledgment is made of the splendid helpfulness of various agencies interested in wild life, in undertaking and accomplishing certain projects vital to the welfare of wild life, but for which this year no appropriation was at hand.

Such was the work of the Federation of the Bird Clubs of New England. This association organized a drive on the wild life lovers for the acquirement of suitable areas to be sanctuaries for wild life for all time, and has already turned over to the State Carr Island, Ram Island, Milk Island and 100 acres of forest on Mount Watatic. It was instrumental also in having Egg Rock set apart as a sanctuary. (See "Reservations.") It likewise financed the patrolling of the most important of the tern colonies in breeding season; maintained a special agent on Martha's Vineyard for the extermination of vermin as an additional measure of protection for the heath hen; contributed to the purchase of a furnace for the dwelling at Penikese Island; and conducted (in co-operation with the Massachusetts Society for the Prevention of Cruelty to Animals) a campaign to stop the practice of abandoning cats. It likewise sought to stimulate interest in wild life by providing free lectures on birds, and conducting a field day and bird conference at Babson Park.

Of an equally important nature was the action of the fish and game associations in providing a fund for increasing the rearing facilities at the fish hatcheries and game farms. Plans had been made to enlarge the stations for carrying a good proportion of the stock to larger size, so that the birds could be liberated in the spring as adult stock, and the fish distributed as one and two-year old fish, large enough to be caught when planted. The hunters and fishermen strongly favored this plan. When it became known that no appropriation had been received for construction work, and that consequently this plan would be postponed an entire year, the situation was laid before the clubs, with the suggestion that they finance the work. The response was immediate, and with the funds contributed certain needed extensions were made. After completion of the work (which is still in progress) a full statement will be made in the annual report.

Credit is due likewise to the fish and game associations for their nearly unanimous support of the sporting license bill when it was before the Legislature. In addition to the foregoing, the associations continued to work for the cause of fish and game conservation in so many and varied ways that space does not permit enumerating them.

Acknowledgment is made of the unremitting helpfulness of the Federal Game Warden for this district, the State Constabulary, and the State Police, whose boat and officers have been at our disposal on various occasions.

And once more we repeat our acknowledgment of the unwearied interest and helpfulness of the large number of persons and organizations who in this and other years have worked with us on matters of mutual interest.

ENFORCEMENT OF LAW

No change was made in the personnel of the law enforcement organization during the year. The regular field force of thirty-one wardens, though not large enough to adequately patrol the State, has maintained a high record of efficiency in coping with violators of the fish and game laws. It is hoped that the time is near at hand when the funds will be available to increase this force to a number commensurate with the task of enforcing the fish and game laws over the length and breadth of the Commonwealth and to keep pace with the ever increasing number of hunters and fishermen.

Although it has been necessary to use some of the wardens to assist on fish and game propagation and distribution from the hatcheries, yet the bulk of this work comes at a time that is usually considered an off-season in law enforcement work, and for that reason it does not interfere materially with the regular patrol work.

Although each city and town has the right to request this Division to appoint a local fish and game warden to be compensated by the town, only 65 cities and towns have taken advantage of this law and requested the appointment of local wardens. In addition to the town warden force, the regular force is supplemented by unpaid deputy wardens numbering about 150, and although some of the men on this volunteer force have worked hard and conscientiously, yet the sum total of the accomplishments of this force was, in the main, rather disappointing.

From this town warden and deputy warden force 12 men were selected and employed as special wardens for a month during the hunting season. As far as possible the men selected were those who had shown particular zeal and initiative in the gratuitous service they rendered in the past to our district wardens.

Three new Ford touring cars were added to the equipment of the law enforcement unit, and one of the 1922 Ford cars in the service was exchanged for a new car. This brings the number of Ford cars in the service up to 22, and 9 more will be required to put the warden force on a thoroughly efficient motorized basis.

The court work for the year was as follows: Number of cases, 697; convicted, 656; discharged, 41; (filed 75, appealed 41); fines imposed, \$9,928; costs paid, \$131.05. Licenses revoked: resident combination, 82; resident hunting and trapping, 46; resident fishing, 70; non-resident combination, 1; non-resident fishing, 4; alien hunting, 2; alien fishing, 9; lobster fisherman's, 1.

A consideration of the cases brought before the courts shows that the violations which are most numerous do not change very much from year to year. Fishing without a license heads the list each year, and this year 182 cases were brought before the courts on this charge. No apparent reason can be discovered why this law is so widely violated. It has been necessary to obtain a fishing license since January 1, 1922, and enough publicity has been given this matter during this period of time to insure all fishermen knowing the requirements of the law.

The alien population is always a source of trouble in the enforcement of the game laws, and during the year 19 aliens were taken before the courts for the unlawful possession of firearms, and in all the cases except one a conviction was obtained and the firearms confiscated. Closely associated with the alien problem are the cases of killing song and insectivorous birds, of which there were 25. Practically all of these violations were committed by foreign-born residents.

One of the most contemptible forms of violation which appears to be always with us is hunting and fishing before the season opens by the so-called "sooner," thereby robbing the law-abiding sportsman of his share of fish or game. An example of this type of violation is the case of two men who were arrested on August 2 after having killed a deer at Sandwich. There can be no doubt of these violations being deliberate and premeditated.

Another form of violation which has been very common during the past few years is that of killing protected shore birds. It is true that of the many species of shore birds only four may be legally killed, and some of the protected birds closely resemble those which may be legally hunted. Nevertheless, it is incumbent upon every person who hunts shore birds to thoroughly school himself in their identification or to refrain from this class of hunting. While these violations are not as wanton as in the case of the "sooner," they are inexcusable no less.

Hunting without a license is in no way an obsolete charge, as 66 cases were prosecuted under this heading. While its disregard in no way compares with the fishing license law violations, they are entirely too numerous. When the sporting license replaces the separate hunting and fishing licenses on January 1, 1926, it is hoped that unlicensed hunters and fishermen will be reduced to a minimum and efforts will be redoubled to accomplish this.

The outstanding serious violation of the year was in the case of two men arrested in northern Worcester county in the act of setting out poison to kill fur-bearing animals. Not only had they unlawfully poisoned many fur-bearing animals, but many domestic animals were killed and endangered. Fines totalling \$375 were assessed against them. This was the full extent of the law as it then stood on the statute books, but as a result of this case the penalty for this offense was increased to a heavy fine and a jail sentence. The apprehension of these men ended a very elusive form of violation which was known to have existed in that locality for some time.

It is encouraging to note that the trapping laws as a whole are very well observed. Gradually, the trapping industry is being placed on a commercial basis as shown by the advent of a separate trapping license next year. As trapping is more of a business than a sport, this appears to be the proper way of handling it, and with the proper observance of the laws the fur industry can be maintained and increased in this State.

Outside of the prosecutions for fishing without a license there were no violations of the inland fisheries laws of a serious nature. The usual run of cases of taking short fish or taking fish out of season were handled, and neither class is excusable. The man who goes fishing without providing himself of the means of measuring his fish knows that he is laying himself open to the commission of violations almost as much as the "cheater" who fishes before the season opens.

In the coastal fisheries, violations of the lobster laws were most prevalent, particularly taking "short" lobsters. 18 cases of this sort were prosecuted during the year involving fines of \$776, and 308 "short lobsters" were seized in the prosecutions. The proper enforcement of the lobster laws continues to be a serious problem. The willingness of the public to buy these illegal lobsters through "bootleg" trading adds to the difficulty. The Division is doing all within its power to maintain and build up the lobster industry in this State, but unless the lobstermen themselves realize that it is being done for their benefit, and co-operate, this policy cannot be successfully carried out, and the ruin of their business and an economic loss to the public will result. To further assist the lobster industry a group of wardens regularly inspects the shipments of lobsters from the Maritime Provinces during the spring and early summer, seizes the illegal lobsters, and liberates them in our waters. This is an important factor in the work, as shown by the fact that 14,828 lobsters were seized and liberated during the year.

Other violations pertaining to our coastal fisheries were the torching of herring in the restricted areas of Boston Harbor and adjoining cities and towns. The most effective drive against these violators occurred at Winthrop on September 2, when ten men were apprehended and arrested, and fines totalling \$500 were imposed by the lower court, from which the defendants appealed.

The taking of smelt during closed season by residents of the North Shore has presented another problem. This year 9 violators were taken on one occasion, and ultimately paid substantial fines. Vigorous action of this type has resulted in a fairly good observance of the smelt law on the South Shore, and the same results are looked for in other sections.

NEW LEGISLATION

The following laws were enacted during the 1925 session of the Legislature: —

Chapter 295. This was the most important law passed during the session, and in effect abolished the present form of separate hunting and fishing licenses and substituted a sporting license to cover both hunting and fishing, and a trapping license to cover trapping. Considerable dissatisfaction having arisen over the amount of the non-resident license fee, this Division is filing a recommendation for further consideration of this point by the Legislature. (See Appendix for recommendations for legislation).

Chapter 249. This law vests in the Governor greater authority in the matter of protecting the forest lands during a time of extreme drouth. When this condition obtains, he may close the woodlands to all persons except the owners or their agents, and may suspend the fishing season if such action is deemed necessary to prevent forest fires. Previously the Governor's authority was confined to the suspension of the hunting season. He may also arrange for an extension of the seasons which had been closed, in order to provide just and reasonable facilities for hunting, trapping and fishing. No closed season will be declared on migratory water fowl or shore birds during a forest fire crisis, but such species may be hunted only in the areas remote from the danger zone.

Chapter 179. This law closes the season on hares and rabbits on February 15 in all counties except Nantucket. Previously the season had closed on the last day of February. The season on Nantucket remains unchanged.

Chapter 104. The season for all trapping now closes on March 1, and muskrats are thereby protected during the time when they are commencing to breed and during the time when they are often driven from their natural habitat by flood conditions, resulting in larger catches being taken.

Chapter 334. This law increases the maximum penalty for the placing out of poisons to a fine of five hundred dollars and imprisonment for not more than one year, or both such fine and imprisonment. This was an emergency law, enacted to stop the practice of poisoning fur-bearing animals which had resulted in the death of many domestic animals.

Chapter 320. As all public lands are game refuges, the hunting or trapping of any birds or quadrupeds whatever thereon had been prohibited. This law allows the persons in charge to issue permits for hunting or trapping those species known to be destructive to useful game or to agriculture. It also permits the Commissioner of Conservation to declare an open season on deer in certain of the State forests where the deer have been doing damage to the forest nurseries. Such an open season would be declared at the time of the regular open season on deer and under the same regulations.

Chapter 199. This increases the bounty on the wild cat and Canada lynx from five to ten dollars to provide a greater incentive to kill them, for these animals are increasing and are particularly destructive to bird and game life.

Chapter 103. This law continues for another three-year period the close season on quail in the counties of Essex, Hampden, Hampshire, Middlesex, Norfolk, Worcester and Nantucket.

Chapter 105. Under this act a law enacted several years ago whereby the use of live decoys on Nantucket was prohibited has been repealed.

Chapter 106. This provides a two-year close season on deer in Essex county.

Chapter 107. A close season of two years for hares in Essex county is provided by this law.

Chapter 259. This act establishes Egg Rock as a permanent wild life sanctuary, dedicated to the late senior Senator from Massachusetts, Henry Cabot Lodge.

Recommendations for new legislation will be found in the Appendix.

EDUCATION AND PUBLICITY

No departure was made from the usual method of conducting the publicity work by means of illustrated stereopticon and moving picture lectures covering different

phases of divisional activities. The bulk of this work is done by the Director and the Chief Warden, and the calls for lectures steadily increase. This demand may be attributed to an increasing interest in the out-doors and in wild-life conservation, as further evidenced by the increase in the number of organized fish and game associations and sportsmen's clubs, before which the greater number of these lectures are given.

The usual exhibit of live fish was displayed in the State Building at the Eastern States Exposition in Springfield, but no other exhibits of this nature were put on owing to the lack of funds and of the assistance required for their proper handling.

During the year a system was established for the regular contribution of news items to the newspapers throughout the State and to other publications. These contributions discussed in detail the laws and regulations pertaining to hunting and fishing seasons as they were about to open, and also other activities of the Division. A noticeable degree of co-operation was obtained from the press in this work, as demonstrated by the liberal amount of space devoted to the articles. In a great many instances they were reproduced verbatim. In this connection a monthly list of the persons convicted of violations of the fish and game laws and whose licenses to hunt and fish were revoked for one year was given to the press for publication. Experience has demonstrated that the greater part of the violations are wanton and wilful, and for that reason the time has come when the names of these persons should be made known to the sportsmen and the general public. The effect of public opinion may instil a greater respect for the law in the minds of such persons than penalties seem to do. Beyond this — any person convicted of a violation loses his right to hunt and fish in this State for one year following the date of his conviction. Effective enforcement of this law can only be obtained when police officials and the public are in possession of the names of persons not eligible to hunt or fish.

BIOLOGICAL DEPARTMENT

The work continued on the lines established in previous years, and consisted mainly of field work and distribution activities.

FIELD WORK

Examinations were made of ponds where unusual mortality had occurred among the fish, and in addition, specimens of both fish and game from various sources were autopsied and routine pathological examinations made.

Work on the alewife was a continuation of the routine of several years back, consisting of restocking of old breeding grounds now made accessible by the installation of fishways (see "Alewife"); the opening of additional river systems by the installation of fishways (see "Fishways"); biological observations on all alewife streams during the spring run, with special attention given to the return of the young alewives from the spawning beds to the sea.

Detailed information and statistics of the shellfish industries were collected (see "Mollusk Fisheries").

The development of Penikese Island as a wild life sanctuary was in charge of the biological department (for details, see "Reservations").

DISTRIBUTION

The distribution of the stock produced at the fish hatcheries and game farms comprised the bulk of the year's work, and included not only the stocking of covers and waters, together with proper records of the same, but also the supervision of the stock from time of egg-taking until final distribution, as well as the procuring of new brood stock.

Special consideration, too, was given to the stocking of the State ponds. For instance, the salvaged white perch were all planted in ponds specially selected after study and inspection. The same was true of the bass ponds stocked this year, and the list of suitable waters is available for use next year.

Breeding areas which, according to law, may now be set aside in great ponds, were also investigated in several counties, and in due course action will be taken on them.

FISH AND BIRD DISEASE

In addition to routine pathological examinations of diseased fish received at the laboratory from time to time, any abnormal conditions existing among the stock at the hatcheries were studied and treatment applied.

In June a severe epidemic attacked the young pheasants at the Wilbraham Game Farm, detailed under the station report. Although no cure for the sick birds was found, the study given to the subject will be of value in preventing a recurrence of this incident.

A scientific study of the life history of the grouse, covering the entire range of the species in the United States and Canada, is now under way, for which see "Ruffed Grouse." The Division has received specimens from various sources in the State and forwarded them to the investigators for study.

WILD BIRDS AND ANIMALS

WINTER FEEDING

The winter of 1924-25 presented no hardship to the wild life. There were very few sleet and ice storms and less than the usual snowfall. Winter let go early. February and March gave mild, almost springlike weather; and though there was a severe snowstorm the middle of April it was nothing which would affect the wild stock. No emergency existing, very little grain was put out as compared to other years — 2,080 pounds to 342 applicants.

BREEDING SEASON

Wild life of all kinds was favored by a breeding period of exceptionally good weather, with an equally favorable growing season following, and the crop of birds and game as observed in the fall was substantial.

FIRES

The drouth conditions of the past two years were not repeated. Though there were dry periods in August which aroused some apprehension, the rains and snows of October sufficed to thoroughly wet down the ground and remove any possible fire hazard.

POSTED LAND

About the same amount of land has remained posted during the year as that which has existed over a period of years. The organizations of hunters and fishermen have been real factors in reducing the amount of such lands in certain districts. It is to the great credit of the land owners of this State that they have adopted the present democratic attitude toward the fraternity. In return for this splendid attitude it is incumbent on the sportsmen and fishermen to extend their efforts to be a factor in the protection of these open areas.

MIGRATORY BIRDS

Song and Insectivorous Birds

Permits were issued to 81 persons for the collection of birds, eggs and nests for scientific purposes. Sixty reports were made, showing 311 birds and 235 eggs had been taken. There were 283 bird banding permits issued to persons co-operating with the U. S. Biological Survey in their studies in bird migration.

The acquisition of State-owned reservations, to be sanctuaries for wild life for all time, and described elsewhere in this report, will inure to the benefit of the song and insectivorous birds, to whom suitable breeding grounds will thus be insured. For example, the Watatic Mountain sanctuary is the last remaining breeding ground in eastern Massachusetts of the pileated woodpecker.

Migratory Game Birds

Shore Birds. — There was a noticeable increase this year on both migrations in the numbers of the smaller species. It is safe to say that under the Federal regulation all of these smaller species are now given, both in Canada and the United States, a degree of protection that has amounted almost to an absolute immunity from the gunner. Nevertheless, the birds have not come back as rapidly and in such numbers as was reasonable to expect. In this respect the same interesting questions arise as in the case with our song and insectivorous birds. It is obvious that the shore birds are the victims of certain destructive forces separate and apart from the hunters, as is true of the song and insectivorous birds. With the complete protection accorded the latter there would be an enormous annual increase if the destruction by man were the principal factor. Taken collectively a slight increase in the shore birds is noted, particularly in the smaller species and in the curlews.

Plover. — The spring flight was of the usual proportions and somewhat later than usual. There was an unusually heavy fall flight, the birds coming along well toward the early part of the season, then a lull, with a heavier flight later on.

The upland plover appears to be gradually extending its range in this State.

More killdeer plover were reported this year than usual.

The piping plover is just about holding its own.

Snipe. — The spring migration was normal. The fall migration each year depends a great deal on the suitability of the grounds. This year, in common with several years past, the meadows were not in attractive condition in the early part of the flight; but the rains in the later part of the season helped materially, so that more birds than usual stopped during the late migration.

Woodcock. — The spring migration was of the usual proportions. The fall migration included one of the heaviest flights that has been known in this State for many years. It was of short duration, and probably the result of severe weather conditions that hastened the birds along. It is difficult to say whether the presence of more than usual numbers was due to an increase in the number of birds, or because they piled in steadily over a short period of time on account of the freezing weather and snows in the midst of the migrating season.

Rail. — There was nothing unusual in either the spring or the fall migration.

Sandpipers. — The smaller species were present in somewhat increased numbers, both on the spring and fall flights.

Winter and Summer Yellow Legs. — There was one of the heaviest flights of these birds that has occurred for some years, and they moved northward in larger numbers and later in the season than usual. The fall migration started well and continued rather late, with certain periods of scarcity, offset by other times when the birds were quite plentiful.

Curlew. — More curlew are being reported each year, with the indication that these birds are slowly but steadily on the increase.

Ducks. — The wood duck is gradually coming back. So substantial an increase has been reported in certain parts of the United States, particularly in the Mississippi River valley, that it is reasonable to expect this increase will become more and more apparent in the New England States.

The usual scattering of mallard ducks has been noted throughout the year.

The spring flight of red heads was a little larger than usual. The red head stops very largely in the region in and about Martha's Vineyard. Owing to the change in some of the ponds that were former breeding grounds, through the salting down of the water by the heavy storms of a year ago, there is less attraction in this region for the red head than previously. This undoubtedly accounts for the smaller number of birds that stopped as compared to other seasons.

The blue bill and the red head frequent practically the same areas in our State, and the foregoing comments on the red head apply equally to the blue bill.

Black ducks are more than holding their own. With the introduction of the wild life sanctuary and the building up of breeding grounds in many parts of the

State, which today have no such areas, the black duck can be satisfactorily increased in all parts of the State.

The usual scattering of canvasbacks was noted on the fall migration.

Geese. — From December 1, 1924, on, the remarkably mild season had its effect on the fall migration of geese. In the latter part of the season the flight was unusually heavy, due no doubt to a quick change in temperatures toward the latter part of the migrating season. The spring flight was unusually heavy in some regions. Taken as a whole, more were noted than in an ordinary season. The fall flight started earlier and with a more constant flight than usual, no doubt the result of the snappy weather that prevailed about the middle of the migration period.

The spring flight of brant was of ordinary proportions. The southern migration started a little earlier than usual, with more than a normal number of birds appearing toward the latter part of November.

Statistics of the Gunning Stands. — Number of stands operated, 68; geese shot, 3,976; ducks shot, 8,408; live goose decoys used, 3,193; wooden goose decoys used, 2,724; live duck decoys used, 3,288; wooden duck decoys used, 2,010.

Migratory non-game Birds — Gulls and Terns

The amount of appropriation for the protection of wild life in the field makes it impossible for this Division to devote much money to the care of the gull and tern colonies. The Federation of the Bird Clubs of New England volunteered to finance the work during this season, and wardens (vested with State authority) were placed at Chatham, Nantucket, Orleans, Wellfleet, Muskeget and Sandwich and paid by the Federation. These locations were posted with State signs, calling attention to the laws protecting breeding areas.

The fundamental need in the protection of the gulls and terns is to insure to them the undisturbed use of their breeding grounds, which, through the building up of the coast into summer colonies, are becoming more and more restricted each year. State ownership of these breeding areas is the only remedy — hence it has been our purpose to acquire as many as possible of the natural locations. In this objective the Federation of the Bird Clubs of New England is actively interesting itself. Penikese Island, coming through act of the Legislature, was set apart as a wild life sanctuary under the jurisdiction of this Division (as set forth in last year's report), and by similar action this year Egg Rock became a reservation. The Federation of the Bird Clubs of New England has acquired and turned over to the Commonwealth, to be wild life sanctuaries, Ram Island, Carr Island, and Milk Island, and several other locations are in prospect. (For details, see "Reservations.")

Federal Control of Migratory Birds

As recorded in the last report, the Game Refuge — Public Shooting Grounds Bill was introduced into the Sixty-eighth Congress as H. R. 745 and Senate 2,754. Much work was done by this Division to bring about the passage of the bill. Near the close of the session it passed the House, but failed of enactment in the Senate merely because it could not be reached in the press of business in the closing hours. In the course of the session considerable opposition to the Federal hunting license feature of the bill had grown up in the South and West. When the usual annual gathering took place in Denver in August of the officials connected with game, fish and conservation matters, this was one of the principal matters under consideration. A committee of five was appointed, representing the American Game Protective Association, the Izaak Walton League of America, the Western Association of State Game Commissioners, the National Association of Audubon Societies, and the International Association of Game, Fish and Conservation Commissioners — on which committee the Director of this Division was appointed. Its purpose was to draft and submit to Congress a bill which would unite the sentiment of the North, East, South and West on the measure, and at the close of this report the preparation of this bill is in progress.

UPLAND GAME
The Hunting Season

The hunting season was one of the most favorable that has been enjoyed by the sportsmen of this State in many years. There was sufficient rain to prevent the necessity of closing the season on account of drouth, and at the same time not enough to spoil many days in the open. The unusually snappy weather occurring in the middle part of the season was one of the factors in helping along the woodcock flight, so that our sportsmen had better shooting than has been the case for many years. Taking all species of upland game together — there was more of it in the covers, and the hunting was under more favorable conditions, than has been the case for many years.

Pheasants. — The covers contained unusual numbers of pheasants at the opening of the breeding season, due partly perhaps to the reduced kill in the very brief open season of 1924, and the numbers were swelled by the hatchery-reared birds wintered by the clubs and liberated in the spring as adult stock. The weather in the breeding season being mild, dry and with little rain, exceptionally large numbers of young were raised.

The plan of liberating as many pheasants as possible in the spring as adults has been tested sufficiently to demonstrate its value. Because shooting has been confined to the cock birds, efforts in the future will be directed toward putting out an increasing number of mature cock pheasants each spring. The pheasant is coming more and more into favor as a game bird, with a corresponding lightening of the strain on the native species.

The total number of pheasants reported shot in open season was 2,821, divided according to counties as follows: Barnstable, 16; Berkshire, 92; Bristol, 184; Essex, 420; Franklin, 79; Hampden, 242; Hampshire, 258; Middlesex, 500; Norfolk, 287; Plymouth, 266; Suffolk, 4; Worcester, 470; locality not reported, 3.

Ruffed Grouse. — With all circumstances in their favor — a curtailed open season in 1924, an open winter with mild weather and no deep snows, added to the scarcity of natural enemies (notably goshawks) the ruffed grouse wintered in excellent shape and good numbers.

Weather conditions were exceptionally good both during the breeding season and in the growing period following. Though in the eastern part of the State there seemed to be no specially noteworthy production of young, in the central and eastern sections good-sized broods were reported through the summer, and the predictions were for a good season in the fall.

For most parts of the State it was true that the grouse season opened under favorable conditions. The weather was clear and cool, the woods fairly moist, and the leaves partly off the trees. Grouse were reported plentiful in some places and very scarce in others, and the conditions of last year seemed to prevail, namely, that the birds were very wild and found in unusual places the first of the season, while at the same time missing from their common resorts. As the season went on they showed up in better numbers.

Looking back over a period of years it is interesting to note that nearly every fall the same comment goes round, that grouse are very scarce at the opening of the season; that they appear to be scattered into all kinds of unusual places; and that probably they will show up in better numbers towards the end of the season. These are the stock expressions passed around by the hunters. As a matter of fact, it is a perfectly logical situation. At first the weather is mild, there is still an abundance of feed, the birds are scattered, and it is only when colder weather comes and the food supply shortens up that the birds begin to collect in the most favorable areas. Likewise it is inevitable that certain localities will contain more birds than others. This accounts for the "spotty" conditions that are often referred to. It is likewise logical that in some regions where sufficient heavy timber remains, together with favorable breeding and feeding grounds, the birds will be present in greater numbers year in and year out, than is the case in localities where, because of changes due to deforestation and the more rapid building up, the birds are compelled to seek new

grounds or have a less attractive location than formerly existed. Taken as a whole, the supply of grouse this fall was very satisfactory, and the indications are that more than the usual number are left for next breeding season.

A special study of the ruffed grouse is under way in New England. The life history, particularly the cause of the periodic shortage, will be closely studied, and will form a part of the general investigation embracing the entire range of the grouse in the United States and Canada which is being conducted by a National Ruffed Grouse Committee appointed by the American Game Protective Association of New York. The field is so large, a sub-committee was formed in October, 1925, with Dr. John C. Phillips as chairman. Dr. Alfred O. Gross of Bowdoin College, Brunswick, Me., is directing the work in New England, and Dr. E. E. Tyzzer of the Harvard Medical School has volunteered to do the specialized work concerned with diseases. Dr. Arthur A. Allen of Cornell University is directing the work in New York and in other States included in the range of the grouse outside of New England. Not less than 15 diseases or parasites, largely of the alimentary tract, have been found. It is yet too early to give a fair estimate of the relative importance of these diseases, but it is hoped that the work of the next three years will yield definite results and conclusions. In this, one of the most extensive and intensive researches of this kind ever undertaken, the co-operation and assistance of persons and organizations has been asked, particularly in supplying specimens. Thus far over 700 grouse have been received by the investigators. All specimens from Massachusetts and New England should be sent to Dr. Alfred O. Gross, Bowdoin College, Brunswick, Me.

Quail. — On the quail range winter conditions were favorable to the quail — no deep snows or extreme cold, and no necessity for artificial feeding. More brood stock was seen at the opening of the breeding season than has been the case for several years, and there was a large production.

There were more quail in what we might call the natural quail country of the State at the opening of the shooting season this fall than has been the case for many years. We hope that our efforts to restock Essex county will bear fruit one of these days, but up to this time but few coveys of birds have been reported. In those counties where they have been systematically gunned year in and year out the birds have come back strong. From this we do not mean to argue that shooting up of the stock is the prime requisite in producing an annual increase; but it is an interesting fact that the birds do not seem to be prospering in the counties where the season has remained closed. It is merely an interesting example of the complications present in wild life administration. On the other hand, on the island of Martha's Vineyard where the birds have been systematically protected for a period of years, together with a limited amount of annual stocking, the birds have increased in such numbers that an open season this fall was warranted. A succession of two or three mild winters should put the quail supply in a most satisfactory condition — at least in a portion of the State, and might permit of the trapping up of a limited number of quail for distribution in those sections, suitable for the birds, where they have not prospered.

Deer. — The season on deer coming within the period of this report (December 1-6, 1924) was a remarkably successful one, weather conditions ideal with cold, crisp weather and plenty of snow. There were 2,012 deer shot (1,064 bucks and 948 does) divided by counties as follows: Barnstable, 145; Berkshire, 402; Bristol, 41; Essex, 19; Franklin, 404; Hampden, 253; Hampshire, 240; Middlesex, 24; Norfolk, 6; Plymouth, 121; Worcester, 356; locality not reported, 1. This is the largest number of deer ever shot in any open season, previous records being 1,587 in 1913 and 1,581 in 1922.

The usual number of young were seen in the summer of 1925, and in spite of the large number killed in the open season in December, 1924, deer were apparently as numerous as usual at the approach of the 1925 open season in what are considered the deer counties. In other parts of the State, where the stock is smaller and the environment not specially suitable, they have thinned out, and in the eastern part of the State very destructive toll is taken by automobiles, trains and

dogs. On the matter of damage to crops, the tendency at the present time among the farmers seems to be to collect money damages, rather than to take advantage of their privilege under the law of shooting the deer. Deer shot while damaging crops numbered 83; and towns were reimbursed by the Commonwealth for claims paid for damage by deer to the amount of \$5,997.20, with unpaid claims still on hand awaiting further appropriations.

Squirrels. — Taking the State as a whole, the gray squirrel seems to be on the increase. These animals will travel to locate an adequate food supply, with the result that there may be a scarcity in a given locality in a given year, with a fairly abundant supply the following year if food conditions are favorable. A great deal depends on whether the nesting conditions have been preserved or wiped out through deforestation.

Hares and Rabbits. — The breeding season was favorable throughout the entire State, with the result that nearly a normal supply of both cottontails and white hares obtains. Both species can come back very quickly if free of devastation by disease or vermin. While the hunters undoubtedly clean them up pretty closely in certain localities, yet there are vast areas in which practically no hunting is done, which serve as reservoirs from which the depleted areas can quickly be refilled if the breeding and living conditions are favorable.

Fur-bearing Animals. — The beneficial effect of the closed seasons which have been in force for several years is noticeable in some species. The style in furs is always a factor. For example, in a given year the muskrat will be most in demand, and in another year this may shift to some other species. At present there is little market demand for skunk skins, and with the lessening price and demand goes a less intensive pursuit of the animal. The same to a less extent is true of the muskrat. Likewise the price of furs determines in a substantial way the intensity of the annual trapping campaign. At the beginning of the present trapping season the prices of the more common furs are low as compared to those of the last few years.

The indications are that there is a substantial stock of fur-bearers. There will always exist the problem of adjusting the operations of the trapper to those of the hunters and the land owners. We are annually beset with complaints of sporting dogs being taken in traps, and in some instances other domestic animals. There are also complaints of carelessness in the placing of traps. Some go so far as to contend that the trapper should be put out of business, and that no traps should be permitted to be set. There are very few species of fur-bearers that do not at some time or other in the year take their toll of other species of desirable wild life. The systematic trapping of them is not only desirable on account of the value of the annual catch, but likewise in assisting in the preservation of the balance of nature.

The reports by trappers of their catch in 1925 show: number of reports, 447; muskrat, 5,017; mink, 655; skunk, 3,923; fox, 1,481; raccoon, 389; squirrel, 17; weasel, 197; otter, 21; total, 11,700.

ENEMIES TO GAME

Year by year we repeat the statement that the wild hunting house cat is one of the greatest enemies to wild life existing today, and we await the time when this truth shall have taken root in the public consciousness. Only then can remedial measures be secured. To help bring this day nearer, the Federation of the Bird Clubs of New England co-operated with the Massachusetts Society for the Prevention of Cruelty to Animals and the Massachusetts Fish and Game Protective Association in an attempt to stop the abandonment of cats by thoughtless citizens. Twenty-five hundred posters were placed at central points, and over 5,000 letters distributed citing the law and urging people not to abandon their cats at the close of vacation time.

On all sides may be seen evidence of the necessity of reducing to a harmless minimum certain enemies to desirable wild life, particularly such species as the great horned owl, the weasel, the red squirrel and the wild hunting house cat. In

the same list could be placed other species that are more or less on the border line, but concerning the above there is no question. The extent of the depredations by the wild hunting house cat has been stressed so often that it appears to be a cold repetition, but careful observation shows the destruction from this cause to be enormous. We appreciate the practical difficulty of the rural land owner in trying to keep under control the house cat upon which he relies to keep down the vermin around his homestead; but serious efforts are being made by many land owners to work it out. If all cats could be closely restrained during the breeding season for birds and game, an immediate and substantial increase in the desirable species would follow. The land owner is entitled to protection for his cat that is retained for the destruction of vermin; but the cat which has passed out of ownership and ravages the covers should be systematically destroyed. This cannot be too strongly impressed on the rank and file of our people. We are following the illogical course of expending large sums each year to protect and increase our desirable wild life, while at the same time doing comparatively little to eliminate this great factor in its destruction.

Bounties of \$5 each were paid on 78 wild cats (Canada lynx or loupcevrier) under Section 90, Chapter 131, General Laws.

RESERVATIONS

Martha's Vineyard Reservation

During the early part of the year, beginning with December, 1924, watch was kept both on and off the reservation for violators of the law pertaining to the heath hen. Traps were set and maintained for cats, hawks and rats, and this vermin pursued with firearms as well. The work in January was a repetition of that of December, except that food was put out for both heath hens and quail. During that month 17 heath hens were feeding near the fire tower every day, and 8 more at the farm of James Green at West Tisbury. At other places on the island single birds and two's were found, making the total of all the known birds 31. In February, March and April conditions and routine work continued as described. The winter throughout was mild.

April 18-20 the State Ornithologist visited the reservation to take the annual census, but without much success because of unfavorable conditions. He himself saw 2 heath hens, neither of them on the reservation though within a mile of it, and the superintendent saw one which was on or near the reservation.

In the spring about 4 acres were ploughed to be seeded to clover, and later, a part of it to buckwheat. Corn was placed at the blinds for the study of the heath hens at close quarters and a new blind was constructed. In March, for no apparent reason, the heath hens had dwindled away from the feeding places and but few could be found anywhere. A report of 5 birds feeding near Duart's Pond could not be verified, but there is no reason to doubt it. Four were seen by the Superintendent in April at the farm of James Green.

The weather during the breeding time of the heath hen was favorable in every way. Three broods of chicks were seen during June, one in the meadow half way between the reservation house and the fire observation tower (6 chicks at least), and the other two broods between Pohogonot and the main road between Edgartown and West Tisbury. About that time there were heavy rains, and over two inches of rain fell in three days. It is probable that the rains destroyed these broods, for no young birds were reported thereafter.

Late in March Professor Gross visited the reservation to continue his studies of the heath hen, and a little later made his report to those who had financed his work, several of whom are members of the Federation of the Bird Clubs of New England of which Professor Gross is Vice-President. His report indicated that the heath hen were fewer in numbers than at any time in their history. The situation seemed to call for immediate action and the best judgment of the most able ornithologists; so at the suggestion of and in co-operation with this Division, the Federation of the Bird Clubs of New England called a conference to consider to what extent outside

assistance could be given to help meet what appeared to be a crisis in the history of this colony.

The conference was held on June 4, with an attendance of between 45 and 50 persons. Professor Gross read his report, including specific recommendations, and after a thorough discussion the conference voted as follows:

1. That the work of providing food for the heath hen be continued and the birds baited to and kept on the reservation as much as possible for closer care and protection.

2. That one additional warden with State authority be sent to the reservation and stationed there from October 1 to March 1, with instructions to make a complete patrol of the entire reservation and vicinity each day; and that this patrol be rigidly enforced. The salary of this warden and expenses to be paid from funds raised for this purpose.

3. That James Green of West Tisbury be made a warden.

4. That it be the sense of the meeting that Commissioner Bazeley be requested to retain the area formerly known as the Cromwell tract as an addition to this heath hen reservation and prohibit all shooting on it, when the area is finally acquired by the Commonwealth.

5. That an emergency fund of \$1,000 be raised by the Federation of the Bird Clubs of New England to aid in the work of protection and the money raised to be disbursed by the Federation. In addition to the original plan of trying to raise \$1,000 for a warden to serve through the winter, that an effort be made to raise \$1,000 for vermin control immediately.

Steps were taken by this Division to put into operation recommendations 1 and 4, and by agreement with the officers of the Federation paid James Green a sum of money in consideration of care of the heath hen. The Federation immediately arranged for the Chief of Vermin Control in Pennsylvania to visit the island for a week to study the situation so that the best advice and suggestions would be available. They likewise engaged Edward L. McLeod to take up at once the work of destroying vermin and patrolling against violations. From this time on both the Superintendent and Mr. McLeod pursued an intensive trapping campaign.

The stomach contents of the vermin taken both by Mr. McLeod and the Superintendent have been examined, some of them by the trappers and some by the Marine Biological Laboratory at Woods Hole, but none have shown a trace of birds. This is true also of the hawk stomachs, with one exception, when the two feet of a "small thrush-like bird" were found. The others contained mice, swill or scraps from houses, and the baits used. This, together with the fact that quail have increased (in spite of hawks and cats) to large numbers during the same period in which the heath hens have diminished so rapidly, would seem to indicate that the decrease in the heath hen may not be attributable to vermin, of which there has been no increase during this period.

There is, however, some reason to believe that the sudden decrease in the heath hen may be due to disease. Going back to three summers ago, when the heath hens apparently diminished suddenly (this fact could not be ascertained until fall or winter as during the summer they are hard to see even when fairly numerous), Mr. Frank Goulart found a sick heath hen on the road about two miles from the reservation, and late that same summer the Superintendent found 2 others, one decomposed and the other in good condition, one within 2 feet of the side door of the reservation house. Another was picked up by Harry Athern in West Tisbury and given to the Superintendent. At the time no particular significance was attached to these incidents, but in the light of subsequent events it points to the possibility that these deaths might have been caused by an epidemic, as the fact remains that the disappearance of heath hens was not gradual, but that a vast difference in numbers was noticeable as soon as winter came and the birds were more easily seen in cornfields and other feeding grounds. In the first years of the Superintendent's care the birds increased; he is positive that gunners did not cause the sudden drop, and there has been no abnormal increase of vermin, and no fires,

leaving the logical cause to be some form of sickness. The extent of the decrease is shown by the fact that, while in pursuit of hawks and on the lookout for heath hens, the Superintendent has driven nearly every day this year over the districts inhabited and formerly inhabited by heath hens, and has not seen over four on any one day.

During the period of this report the Superintendent killed 30 cats, 12 crows, 23 hawks and 119 rats of which record was kept, and many others killed by trap, gun and poison, the record of which is lost. Where poison (gas) was used it was impossible to know how many were killed underground. Hawks (mostly marsh hawks) were numerous for a short time in May, but moved on and but very few were seen during the summer on the reservation.

The report of vermin killed by the special warden hired by the Federation is: — 54 cats; 13 hawks; 26 crows; 4 owls; 20 rats.

During the year there were no fires on any part of the island inhabited by the heath hen.

Talks on the heath hen were given by the Superintendent to four groups of members of the Y. W. C. A. on the island. About 100 visitors came to the reservation to see or learn about the heath hen.

Towards the close of the year (November 10) Mr. McLeod saw on the farm of James Green 12 heath hens in one flock.

Attempts to forecast the future of this colony are futile, but no effort is being spared to save it from the threatened extinction.

Myles Standish State Forest

Dating from April 1 the Division of Forestry took over the entire cost of maintaining the Myles Standish State Forest. Previously the Fish and Game Division had shared the cost of the Superintendent's salary. When reduced appropriation made necessary the discontinuance of some lines of work, the above arrangement seemed logical inasmuch as this land has been developed as a State Forest and not as a game-producing area.

Penikese Island Sanctuary

A good start was made in the development of Penikese Island. Part of the program called for the reduction of the island to practically its natural state, and early in April the Commission on Administration and Finance contracted for the disposal of the equipment and demolishment of the buildings. The contractor's work was most unsatisfactory. Work was delayed until mid-August; the men stopped work entirely on failing to receive pay; and the island was left in a wretched condition, with much debris strewn about. Plans are under way for completion of the job. The one-story building (formerly the laboratory) is being equipped as living quarters for the caretaker.

The island is to be used as a natural producing plant for rabbits and quail, the surplus to be transferred to other localities. It is believed this can be done without detriment to the tern colonies. To this end 8 white hares and 79 cottontail rabbits were liberated in March. They bred well, and in early fall the number was estimated at upwards of 200, but no distributions will be made until at least February of 1927, by which time they should have become well established.

The 59 quail which were liberated on the island did not do particularly well, the tern colonies having pre-empted the island from May 1 to the middle of August, driving them from the little available cover. This failure of the quail to reproduce may be due partly to the fact that through a mistake of the shipper Mexican quail were sent.

Scratch feed was sent down for the quail, and the fertile land back of the house is to be developed for growing quail and rabbit food. Shrubbery was planted both to improve the general appearance of the island and to provide cover and food for birds.

It is believed that this island can be made a resting place for geese and ducks on their migrations by tethering out decoys on the high points of land, and providing

fresh water and food for any wild ducks and geese which may alight. With this in view sago pond weed and widgeon grass were planted in two small ponds on the peninsula, and in one on the south corner of the island. Ten mated Canada geese and 8 call ducks were shipped to the island.

A day-by-day record is kept of the birds which visit the island. Pole traps have been furnished the caretaker for catching hawks and other vermin. A general clean-up has been made of all lobster pots and gear which were formerly stored along the shore.

Henry Cabot Lodge Bird Sanctuary (Egg Rock)

By an act of the General Court of 1925 (chapter 259) Egg Rock island was established as a refuge and sanctuary for wild birds, to be known as the Henry Cabot Lodge Bird Sanctuary, and placed under the control of this Division.

Egg Rock lies about one-half mile off the Nahant shore. It is oval in shape, of compact felspar, and, viewed from the north, is like a "couchant lion guarding our shores." It contains about 3 acres, and is some 40 rods long, 12 rods wide and 86 feet high at the highest point.

Old records tell that the gulls laid eggs in abundance there, hence the name "Egg Rock." Large deposits of bird fertilizer are said to have been taken in olden times from the pits of this rock. The seaward side is a great cliff where the birds formerly nested. There is a deep chasm on both of the lengthwise sides, which will afford retreats for the birds except when the surf runs specially high.

Written reports on this rock are very few. In a book entitled "Lin — Jewels of the Third Plantation," 1637, Obadiah Turner writes — "Abel Bullard visited Egg Rock alone, caught many fish and found a large number of bird eggs. Camped in a small grove at the summit." Later one Thomas Dexter cleared off the trees and carried out loam to make a plantation for the growing of cane for chair making. At the present time there is about a half-acre of garden land on the west slope, which might be reforested to attract migratory birds.

The island was ceded to the United States in 1856 by the Massachusetts Legislature for lighthouse purposes. The light first shone September 15, 1857, originally probably a white light, since a reference mentions it being changed later to red. A letter from the Secretary of Commerce dated August 23, 1923 to the Governor of Massachusetts certifies that Egg Rock is no longer needed for lighthouse purposes; and a letter from His Excellency to the Commissioner of Waterways and Public Lands suggested the disposition which has been made of it. The Federation of the Bird Clubs of New England interested itself in the matter, and with the assistance of the Lynn Bird Club secured the passage of the bill.

The light has been partly demolished, and there are four old buildings, — which eventually will be cleared away to bring the rock back to its original natural state for the use of the wild life.

Isaac Sprague Bird Sanctuary (Carr Island)

The State has a valuable addition to its reservations in Carr Island, a gift of the Federation of the Bird Clubs of New England as a "wild life sanctuary for all time." It was purchased from Isaac Sprague of Wellesley Hills, who in disposing of it to the Federation made a liberal contribution to the project. It is to be a memorial to his father, Isaac Sprague the naturalist, and to be known as the Isaac Sprague Bird Sanctuary. Carr Island is of historic interest, for it was one of the landing places of the ferry between Newburyport and Salisbury as early as 1640, when the freemen of Salisbury granted George Carr (who was regularly appointed ferryman) "the island where he now dwells, — it being the greatest island within the town bounds in the Merrimack."

Carr Island is located in the Merrimack River, between Salisbury and Newburyport. It contains approximately 110 acres of rocky ledge, with salt marshes in the easterly end. There is a depression of about 4 acres on the northerly side, in which there is a never-failing swamp, making a cat-tail marsh. There are several acres of tillable land, now grown up to grass; a number of fruit and ornamental trees in

the vicinity of the houses; a grove of pin oaks and another of pines; numerous old and dying oaks; and the island is dotted over with field cedars. This island is suitable for the song and insectivorous varieties of birds, pheasants, and the swamp area when dammed should invite ducks.

On the island there are several buildings, — a dwelling house, to be retained as headquarters for the members of the Federation, a large barn and a vehicle shed. The two latter, following the policy of restoring these sanctuaries to their natural state, will be removed. The buildings in themselves are an item of value, for the lumber can be used in construction at the hatcheries and game farms. The work of salvaging this lumber was commenced this summer by our wardens, and will be continued in slack periods.

Considerable development work is planned, such as restoring the dam and forming a fresh-water pond to attract wild fowl on the spring and fall migrations; but this work will have to await appropriations.

Ram Island Sanctuary

Through the Federation of the Bird Clubs of New England the State became owner of Ram Island as a sanctuary for wild birds.

This island lies from 150 to 200 rods southeast from the southwest point of Mattapoisett beach, and is a natural breeding ground for terns. It comprises about 2 acres of sand and gravel, together with a small swamp and a few bushes, resorted to by black birds. The swamp contains a half-acre pond into which, in winter storms, the salt water washes. With a small amount of work this can be protected and kept fresh and its size increased three-fold, making it attractive to ducks in the fall.

Mount Watatic Sanctuary

Near the close of the year the Federation of the Bird Clubs of New England turned over to the State, to be a sanctuary for wild life, a hundred-acre tract of wild land on Mount Watatic in Ashby. Eighty-five acres are covered with the finest red spruce to be found in eastern Massachusetts, and the remainder is old pasture land, growing up to spruce and pine. This is the last remaining home in the State of the pileated woodpecker, and is the southern limit of the breeding range of the golden crowned kinglet and Canadian zone warblers.

Knight Bird Refuge (Milk Island)

A very valuable acquisition is Milk Island, off Rockport, presented to the Federation of the Bird Clubs of New England by Mrs. Roger Babson, and by the Federation in turn to the State. It is to be known as the Knight Bird Refuge in memory of Mrs. Babson's father and mother.

This island is about 15 acres in area, with a small fresh pond in the center. There is a duck-shooting blind and a small camp. The shores are water-washed boulders and gravel, with some sand on the westerly shore. To the eastward are ledges and boulders. Beach grass is the only vegetation. This island is an exceedingly important nesting place of the common and roseate terns, and will now become a permanent sanctuary for them, as well as a resting place for all migrating birds.

Reservations under Sections 69-75, Chap. 131, G. L.

The Hubbardston Reservation, petition for renewal of which was received in the last fiscal year, was completed for another period of five years from December 15, 1924.

The Lynnfield-Peabody Reservation was re-established for another five-year term from May 25, 1925.

The Millis Reservation was renewed for five years from October 29, 1925.

Petition was received for the establishment of a reservation in Scituate and Cohasset, now under consideration.

INLAND FISHERIES

GENERAL

We continue to stress the statements made in previous reports that the stock of fish in our inland waters is not keeping up with the demand. Massachusetts is a small state with a very large population. Practically all of the ponds are easily accessible by automobile, and the shores are being rapidly built up, year by year, with camps that take the people to those waters in all seasons. These ponds may be fished for one species or another practically throughout the entire year, and the stock can not stand the strain. For many years we have advocated some restrictions on the taking of fish through the year. If the stock is to be kept up, it will be necessary that all our ponds be closed to all fishing for at least a substantial portion of the year. This should include the period of ice fishing and the earliest breeding season, with a further restriction on certain fish such as the small-mouth bass during its breeding season. In other words, if the supply is to be kept up, all fishing in the great ponds should be prohibited from December 1 to Memorial Day, and with further closed seasons on later breeding fish such as the horned pout and the small-mouth black bass. It will be much more satisfactory to the fishermen, in the long run, to have a shorter period with more fish to be taken, than the present long open season with a gradually dwindling supply.

TROUT

For the eastern and central parts of the State the brook trout fishing season was very disappointing. The fishing was poor, and not many good catches were made. The drouth of the fall of 1924 was very destructive to young fish, and again from the middle of May, 1925, the water in the brooks was low. These two dry periods resulted in the loss of many fish, and poor production.

Further west the results were better, as might be expected. The large streams turned out some fine specimens, but in many cases the smaller streams failed to give up the trout they have in years past, for during the extremely dry weather of the fall of 1924 a great many fish died or were destroyed by birds or mink. In Berkshire County the season was not up to expectations. In the early weeks the water remained too high for good fishing and the air was cold; and after hot weather set in a long dry spell had lowered the brooks and dried up the smaller streams. There were some favored sections where very satisfactory catches were made. It is the same with fishing as with the hunting of upland game — the conditions are bound to be "spotty" by reason of the great differences in the physical conditions of the waters.

In some of the rivers of western Massachusetts rainbow trout are beginning to give a good account of themselves. They are showing an increase in the East Branch of the Westfield River, and several were caught at Chesterfield. The Deerfield River yielded some excellent catches, and several weighed as high as three pounds.

CHINOOK SALMON

While several representative ponds were stocked with Chinook salmon, about the only one that showed results was Peters Pond. Here apparently the salmon find conditions reasonably favorable, and as a result of the annual stocking a fair number of fish running up to two pounds have been taken.

PIKE PERCH

This species is found in several ponds, but in none can it be said to be abundant. Its one stronghold is the section of the Connecticut River between Greenfield and Turners Falls. For a number of years pike perch were taken during the breeding season, but finally a law was enacted giving it protection. However, as is usually the case, before this protection was given the stock was so greatly reduced that it is coming back very slowly. The indications are, however, that eventually a sizeable fishery will be built up in at least a portion of the river.

WINTER FISHING AND PICKEREL

In the northeastern section of the State ice formed early (about December 20) and good fishing continued until February 22, making a long and productive season. With local exceptions the season was one of the best in recent years, though the pickerel ran small. It was noticeable that the same individuals were found fishing day after day with success.

For the rest of the State the season ended earlier. Fishing was very good on the first ice, but averaged poor the rest of the season. In many localities after the early good fishing had fallen off the fishermen did not turn out in numbers. Elsewhere the reverse was true — and a check-up of one pond showed 7 pickerel among the 56 fishermen. On the whole, the pickerel ran small and not nearly as numerous as in previous years. In Berkshire County the first of the season was good, but on the whole very few pickerel were taken owing to the thickness of the ice, the depth of snow, and zero weather. Those taken were of good size.

On the Cape the fishing season lasted only a few days.

Our wardens continued the examination of pickerel taken through the ice, with similar findings as in past years, viz., the females much in excess of males, and full of spawn in all stages of development. Four pickerel taken from Big Pond, Otis, on February 1 weighed close to 11½ pounds. Three were females, of which the largest weighed 4¼ pounds. The spawn from this specimen (in the undeveloped stage) weighed 7½ ounces, and fully developed would probably have weighed nearly a pound. It was estimated that in taking this one fish from 80,000 to 100,000 eggs were destroyed. The other two females weighed over 2 pounds each and contained from 35,000 to 40,000 eggs.

We can only renew our representations of previous years—that unless winter fishing is eliminated or greatly reduced, the present demands on the ponds for a reasonable amount of fishing each year cannot be met.

BASS

The bass fishing season was more satisfactory than usual. Efforts are being directed toward a stricter classification of the bass ponds, and the stocking of only suitable waters. There are certain ponds which are primarily bass ponds, or, at any rate, contain an unusually large number of bass. The effort will be made to preserve the bass fishing in these ponds, without extending the distribution to others where bass are today not present, or are present in small numbers.

WHITE PERCH

While we have not been able to establish this deservedly popular food fish in the ponds as completely as it is our desire to do (for the field is enormous and our means almost negligible considering the size of the task) there are in nearly every district several ponds which yield good catches of white perch. (See Fish and Game Distribution).

SMELT

There are several breeding grounds for smelt along our shores that today remain undeveloped, which should be made an important factor in the annual supply. Fishing for smelt is a very popular sport, carried on under very pleasant conditions. When the fish are biting well it is exciting, and productive of a splendid supply of food. The catch for the year has hardly been up to normal, but with increasing attention to the condition of the breeding grounds this fishery could be built up to very substantial proportions.

HORNED POUT AND CATFISH

The horned pout continues to be one of the most popular fish. It has been demonstrated that by pond cultural methods large quantities can be produced. Given a reasonable protection, such as is afforded by the present close season in the spawning period, and the catch limit, the annual supply can be kept fairly

abundant. The problem is to preserve an adequate supply of large-sized adult horned pout in our ponds. The general complaint is that the horned pout runs small, and various reasons are given as to the cause, such as in-breeding and the small size of the brood stock. All of this is more or less logical, when it is considered that the larger fish are caught out, resulting in a brood stock of smaller fish. Our efforts are being directed, through pond cultural work, toward an annual output for re-stocking purposes, of young fish that have been raised from brood stocks of good size.

PONDS

Public Rights

Concerning several ponds in the State there has existed a doubt as to whether they are public or private waters in so far as fishing rights are concerned, as the areas have been increased by flowing and there has been no conclusive evidence available to show whether, in their original state, they contained twenty acres.

Since Chapter 12 of the Resolves of 1921 was enacted empowering the Division of Waterways and Public Lands to make surveys of ponds, our Division has requested that the status of the following ponds be established: Coy's Pond, Wenham; Long Pond, Rutland; Long Pond, Blandford; Bungay Reservoir or Greenwood Lake, North Attleboro. A survey of Coy's Pond in 1921 and of Long Pond, Rutland, in 1924, established them as great ponds containing originally more than 20 acres. A special report of the Division of Waterways and Public Lands to the Legislature (House 209, December 31, 1924) indicated that Long Pond, Blandford, is a great pond, and resulted in the enactment of Chapter 102, Acts of 1925, providing for the establishment of a right of way for public access to said pond. A definite ruling on Bungay Reservoir has not yet been received.

A disputed question concerning the right of fishing in privately owned waters has been ruled on by the Attorney General, to the effect that when public fishing is allowed in such waters, the general laws controlling the taking of fish apply the same as in State-owned waters. This notwithstanding the provisions of Section 32 of Chapter 130 of the General Laws, by which the riparian proprietor of any pond, other than a great pond, and the proprietors of any pond or parts of a pond created by artificial flowing, are given exclusive control of the fisheries therein; and the special rights given by Sections 36-37 to persons who enclose the waters of an unnavigable stream for the purpose of cultivating fish. However, this opinion referred only to public fishing in such ponds, and in no way affected the rights of the riparian owners as afforded them by law.

Great Ponds Stocked and Closed

The following ponds were stocked under Section 28, Chapter 130, General Laws, and closed to winter fishing by regulations which in all cases expire November 1, 1928:—

Forge Pond, Westford, Littleton and Groton; Greenwich Lake, Greenwich; Sodium or Chaffin's Pond, Holden; Fresh Pond, Plymouth; Billington Sea, Plymouth; Island Pond (near Great Herring Pond), Plymouth; West Pond, Plymouth; Forest Lake (also known as Welch, Youth's or Harris Pond), Methuen; Watsons Pond (from December 1, 1925), Taunton.

Privately-owned Ponds Stocked

The following privately-owned ponds were stocked with food fish on stipulation of the riparian proprietors that they will permit public fishing therein for ten years from date of stocking:—

Carpenter Reservoir, Meadow Pond and the Whittin Machine Works Pond, Whittinsville (closed from December 1 to April 30 of each year), fishing permitted to February 11, 1935; Roumaine Pond, Medfield, fishing permitted to August 25, 1935; Clarksburg Reservoir Pond, Clarksburg, fishing permitted to October 22, 1935; Browns Pond, Thorndike, fishing permitted to June 11, 1935; Turnpike Pond, Wrentham, fishing permitted to November 7, 1935.

Great Ponds Leased for Fishing Purposes

Under Chapter 39, Acts of 1919, Tisbury Great Pond in Dukes County was leased, for fishing purposes, to the riparian owners for five years from January 1, 1925. Under Chapter 81, Acts of 1896, Chilmark Pond (except the portion known as the "upper pond") in Dukes County was leased, for fishing purposes, to the riparian owners for five years from March 1, 1925.

FISHWAYS

Work on fishways was carried on through the year as continuously as pressure of other duties permitted. During the alewife run of 1925 all workable fishways were in operation, and were examined periodically from early spring until the beginning of summer. Observations were made on several of the newest fishways by special agents, whose duty it was to regulate the flow of water, to see that a passage-way was provided at all times for the fish, and to keep an accurate record of the species surmounting the ways. In some cases observations were made by night as well as by day.

Surveys were made looking to the eventual installation of new fishways, reports of which will appear on completion.

One of the most important accomplishments of the year was the completion of the final fishway on the Ipswich River, opening this river from the sea to the headwaters, more fully described under "Willowdale Dam."

Alterations in the fishway at Bournedale on the Cape Cod Canal have transformed this way from a practically useless passage into one which promises to be satisfactory in every way.

A wooden fishway was installed during the construction of a new dam by the Montaup Electric Company of Coles River, Swansea, more fully described under "Coles River."

Saugus River

Universal Tide Power Company. — It was found that the fish had surmounted this dam without difficulty, and they were discovered below the Wallace Nutting Dam (next above) where they were unable to ascend further.

Wallace Nutting Dam. — A new set of plans and specifications was submitted early in January to the owner, the property having changed hands since the matter was taken up in 1922. The owner replied that he would prefer removing the dam sufficiently to let the river flow in its natural channel, rather than to go to the expense of installing a fishway. Examination of the site early in October showed that he had drawn off the pond above the dam to escape the necessity of constructing a fishway. A glance at the conditions above this wooden flume showed a drop of two feet from the floor of the apron, making an impassable barrier to alewives. A few boards, a few stones, and labor, is all that is needed, for the present, at least, to make a good passageway for fish, and this work the owner has indicated his willingness to do.

Prankers Pond Fishway. — Late in January plans and specifications were presented to the United States Worsted Company of Saugus, who have signified their willingness to proceed as soon as a proper passageway is provided at the Wallace Nutting Dam, the next obstruction below. One official went so far as to ask our engineer to supervise the construction of this fishway, which he desired to build with his own workmen, then idle on account of a lull in the textile business; but the slow action of the owner of the dam below made this impossible. It is expected, however, that before another season has passed the Saugus River will be completely open from sea to headwaters.

Ipswich River

Ipswich Mills Fishway. — Observations were made three times daily at this fishway from April 16 to May 13 by representatives of this Division, and the flow of water was carefully regulated. From April 17 to 30 inclusive a period of un-

usually high water prevailed, making it difficult for fish to ascend the river and making observations practically impossible.

On May 8 and 9 alewives were seen breaking water about one-half mile down the river from this dam and fishway, but they made no effort to ascend the fishway. Waste gas from the gas house may have prevented these fish from ascending further. No fish positively identified as alewives were seen in the fishway itself during the entire season. We continue to receive reports that dyestuffs are deposited in the river by the Ipswich Mills.

From April 16 to May 13 there were 2 shiners and dace, 68 yellow perch, 1 brown trout and 16 miscellaneous fish (eels, pickerel, horned pout, white perch and suckers) that were observed to pass through the fishway, and 30 fish reported as alewives by an unofficial observer.

Norwood Mills Fishway.—A straight-run wooden fishway constructed at Norwood Mills in August, 1924, was in operation during the spring and summer of 1925, and proved very satisfactory. Large numbers of fish were recorded as seen during the spring and summer. As early as March 15 (considerably earlier than usual) 75 yellow perch were noticed in the vicinity of the fishway. Through the co-operation of the owner a screen was installed across the stream at the entrance to the fishway, which has been valuable in directing the fish into the lower entrance.

Between April 1 and June 30 there were observed just outside or passing through the fishway, 12 shiners and dace; 119 yellow perch; 1 trout; 39 miscellaneous fish (pickerel, eels, suckers, horned pout, sunfish, minnows) but no alewives.

Willowdale Dam.—Upon the completion of the fishway at Norwood Mills relations were reopened with the present owner of the Willowdale Dam, this property having changed hands since negotiations started in 1922.

A conference with the owner, representatives of this Division and a representative of the Salem-Beverly Water Board on March 10 resulted in the preparation of a new set of plans and specifications which were presented to the owner in April. It became known during the conference that the Salem-Beverly Water Board had agreed with the owner to pay for half the cost of constructing the fishway, thereby obtaining certain water rights at this dam. After considerable correspondence and further modification of plans, a cement straight-run fishway was constructed and the work completed on November 12. Our engineer reports it to be a good piece of work, promising to be one of the best fishways yet constructed in the State. Indications are that the piling-up action of the water at the foot of the dam will tend to maintain a high level in the lower end of the fishway, thus making it necessary for the fish to pass only a few steps during spring conditions of the river.

Parker River

No fishways were installed on the Parker River. Plans and specifications have been for some time in the hands of the owners of the dams on this river where fishways are deemed necessary.

Merrimack River

Lawrence Fishway.—This fishway was in operation somewhat earlier than usual, the river having dropped sufficiently during early April to permit connecting the iron flume with the dam proper on April 14. The fishway itself was in operation from April 14 to June 30. Inspection was made by a representative of this Division during this period, and a special observer was hired to make day and night observations, as well as to regulate the flow of water through the fishway. The first alewives appeared in this stream on April 28, something over three weeks earlier than last year. During the observation period considerably greater numbers of fish were seen ascending than had been true the preceding year, due in part to the earlier opening of the fishway. The figures are: 1,127 alewives; 1,952 shiners and dace; 79 yellow perch; 1,872 miscellaneous species.

The iron flume and overhead iron work were painted again this fall, through the courtesy of the Essex Company who undertook the job, charging for material and

labor only. Preliminary arrangements have been made for repairs to this fishway, made necessary by the severe weather to which it has been exposed several months of each year since its installation. Owing to lack of funds it was not possible to let the contract for this work this year.

Lowell Fishway.—Records of the special observer showed that large numbers of alewives and other fish passed over the dam. The first alewives appeared in the fishway on May 17, some 19 days after they were first noticed in the Lawrence fishway. The usual running time between the two dams as recorded for the past two years has been four days. It is possible, of course, that many of those seen at Lawrence so much earlier reached their destination and surmounted this runway unobserved, or may have spawned in that stretch of the river between the two dams. Between April 22 and June 30, the period the fishway was in operation, the following fish were seen ascending the runway: 4,181 alewives (in addition to this number, all the pockets were so full of fish on June 12, 15 and 16 that it was impossible to estimate the number); 354 shiners and dace; no yellow perch; 1 trout; an unrecorded number of eels and suckers. The observer reports a few fish ascending during the day and large numbers at night.

Paskamansett River

The fishway at Russell's Mills, South Dartmouth, located on what is known as the Cummings Dam, was inspected periodically during the spring run. Unless all the flashboards in the top compartment adjoining the dam are removed, thereby drawing down the pond above to a small stream, the fish are unable to surmount this dam. When the five-year period has elapsed (during which owners of dams who have installed fishways according to this Division's plans are exempt from the necessity of making changes) it will be necessary to require very definite alterations in the design of this fishway.

Taunton River System

East Taunton Fishway—Raynham.—Alewives (seen by our representative) appeared in this stream below the fishway as early as March 26 and 27 on the Raynham side. This is exceedingly early for this locality, and they may have been an advance guard, for no more were seen until some ten days later. Alewives were reported as having returned in greater numbers than ever before, due undoubtedly to the annual planting of adult stock for some years past.

On Sunday, April 27 the visit of motorists from all parts of New England to view the famous herring run, resulted in the greatest traffic jam in the history of the city. Machines could not get within half a mile of the herring run proper, the point where the herrings could be seen to best advantage as they climbed the fishway by thousands to reach the spawning grounds north of the East Taunton Dam.

Jenkins Leatherboard Company Fishway.—Frequent observations were made at this fishway (located on Town River at West Bridgewater) by a member of this Division and by the superintendent of the Jenkins Leatherboard Company, who not only made these records but accomplished certain alterations in the lower compartments of the fishway and effected the transportation of alewives by net over the dam. It is indisputable that further alterations are necessary, and as the company has shown great interest, these will undoubtedly be brought about another year.

Previous to April 13 various fish were seen in the fishway in small lots. On the 17th 10 alewives were seen by the superintendent of the company, and 12 on the 18th, as well as several young perch on both dates. The identity of the alewives is certain. During May several schools of alewives were seen in the fishway, as well as large numbers outside in the stream. On May 4,—100 were seen; May 11, 100; May 13,—2 schools of about 50. On May 23 the alewives seen in the stream had disappeared. Some were seen above the dam, proving that they passed through the fishway.

Stanley Works Fishway.—The fishway located on the dam of the Stanley

Works (Town River, West Bridgewater) was inspected periodically and observations made during the spring by members of this Division and employees of the Stanley Works Company, who regulated the flow of water and kept records of all fish seen in the fishway. On May 6 two alewives were seen in the fishway, and on May 4, four. This is the second year these fish have appeared after having been absent many years, and on June 3 one was captured about one-half mile above the fishway, which is additional proof that many undoubtedly passed through when observers were not at hand. It has been suggested that a screen be installed from the lower end of the fishway across the stream, thus helping to guide the fish through the way, and this suggestion will be presented to the Company shortly.

Easton Investment Company Fishway.—This fishway (located on the Town River, West Bridgewater) was in operation between March 16 and May 31, in good working order, and observations were made periodically. A resident near the fishway reported seeing yellow perch in the fishway on March 15, and a representative of this Division saw perch and pickerel there on March 16. This is particularly early for these fish to appear at this location. No alewives were seen during the period observations were made.

Hanson Cedar Company Fishway.—The fishway located on the property of the Hanson Cedar Company, Stump River, Halifax, was inspected during the spring run and early summer by a representative of this Division, but no fish were seen.

The same conditions were found to exist as for the past two years, viz., that when the water is low in the river, the base of the run in the top compartment is not low enough in the bed of the stream to allow water to flow through the fishway. At the time this fishway was installed, the drouths which have been experienced in the past two years were not anticipated. The owners will be requested next year to make alterations, and if they are unwilling, the Division after the expiration of five years after installation will require them to do so.

Carver Cotton Gin Company Fishway.—Examinations were made at this fishway (located on the Satucket River, East Bridgewater) by a representative of this Division starting early in April and continuing through May. No alewives or other fish were observed in the fishway during inspections; in fact, the alewife has not yet appeared in this branch of the Taunton River system.

This fishway was installed five years ago and has never functioned satisfactorily, careful check having been made year by year. As five years have passed since the installation, the owners may now be required to alter the fishway. The matter has been called to the owners' attention, and they have signified their willingness to receive suggestions.

Electric Light Power Plant Fishway and Star Mills Fishway.—Frequent inspections were made of these two fishways (located on the Nemasket River, Middleboro). They were found at all times properly regulated, with large numbers of alewives ascending.

At the Electric Light Power Plant fishway it is difficult for the fish to surmount, and they show evidence of being exhausted by the time they have reached the top compartment. It is expected this condition will be remedied before another season. The town took considerable interest in both the fishway and the fishery. A man was hired to prevent trespass on the grounds adjoining the fishway and disturbance of the fish. The fishery was sold for five years to George M. Besse of East Wareham, who permitted all the fish to run to the spawning grounds. One of the biggest runs through these fishways occurred May 17 and 22, similar to the big run at the East Taunton fishway. These same fish reach, eventually, the Middleboro fishways.

The fishway at the Star Mills below Wareham Street was in good working condition, with large numbers of fish in every compartment, surmounting without difficulty.

Agawam River — East Wareham

The usual annual inspections were made of the fishway on this stream. Mr. George M. Besse of East Wareham operated the fishway again this year with his

usual interest and enthusiasm, regulating the flow of water and allowing large numbers of alewives to surmount the fishway to the spawning beds.

Monument River

Bournedale Fishway. — Early in March the selectmen of Bourne notified this Division that alewives were having difficulty in surmounting this fishway. After conferences between the Division's representatives, the selectmen and the engineer for the Boston, Cape Cod and New York Canal Company, the necessary alterations were planned, to which the company agreed. This fishway has never functioned properly since its installation, because the lower compartments were not extended far enough out into the Canal, and all in general were designed too long, allowing for no resting pockets while the fish were making the run. This fishway has been in a dilapidated condition for several years. By the middle of November a fine, well-constructed fishway had been completed, which is expected to withstand the severe conditions to which it is exposed both from weather and tide action. The need of cleaning out the stream between the fishway and headwaters of the river (now full of debris and obstructions) has been taken up with the selectmen. Handled properly, this stream could be one of the most valuable alewife fisheries in the State and bring considerable revenue to the town.

Red Brook — Cataumet

Observations were made during the spring in the fishway on Red Brook, Cataumet. It is in a very bad state of repair, no changes having occurred in conditions during the past year, and alewives are unable to reach the spawning beds. The Red Brook Pond above the fishway is one of three ponds controlled by L. B. Handy of Wareham, who leases it from the Estate of H. R. Baker, which has a deed of all land flowed by the dam at the present highway. Since the fishery on Red Brook is controlled by the town of Bourne, and no alewives are reaching the pond, this is a matter for the town to take up with the lessee, and it has been brought to their attention.

Cole's River

Montaup Electric Company Fishway. — During the construction of a new dam by the Montaup Electric Company of Somerset on Cole's River, Swansea, a new wooden fishway was installed last May, of the type known as the Keil. Inspection during the spring run showed that fish were able to surmount the fishway easily. The company will be asked to make certain alterations and corrections before the fishway is accepted, as they proceeded with its construction without first securing approval of the plans and specifications.

POLLUTION

No serious pollution problems arose during the year. Such as were brought to our attention were investigated and handled in the usual manner.

PROPAGATION OF FISH AND GAME

FISH HATCHERIES AND GAME FARMS

General

No appropriation was received for construction at the fish hatcheries and game farms, making it impossible to carry out the plan of enlarging the stations to permit rearing a large proportion of the stock to adult size before liberation. Hence no changes were made, except such as could be paid for from the funds contributed by the fish and game associations (mentioned under "Acknowledgments") and from some very small balances remaining from the previous year.

The most important change during the year in the method of pheasant propagation was the adoption of the old English system of controlling the birds by use of the brail. The brail is a Y-shaped piece of leather or rubberoid, and is riveted

around one wing in such a way as to prevent flight. The device will permit carrying large numbers of birds in open pens, whereas the work heretofore has been confined to covered pens. The result will be more economical operation, and the production of a stronger and better bird by reason of the greater freedom and variety of food made possible by the larger range. It has been found that on removal of the brail the bird has full use of its wings. The brail is occasionally shifted from one wing to the other. It has the advantage over the method of clipping the flight feathers, in that the bird is in condition for liberation at any time should this become desirable.

Ayer Game Farm

The opening of the year found the station with a brood stock of 390 pheasants on hand, and with half its complement of pens completed and in use, the 32 pens being linked up into compound units or strings of four pens each. Each string was used to winter 50 birds. Construction was well under way on the duplicate set of 32 pens which would be required for breeding operations in the spring.

The birds wintered well, with a very low rate of mortality, and the laying season began with 379 on hand. The first eggs were picked up on March 31, and by April 10 the daily production was over 50 and shipment of eggs was begun. There were 12,773 eggs collected, of which 12,333 were distributed to applicants with very slight losses.

Distribution of the brood stock, numbering 348 birds, was made between June 20 and July 7. Considerable loss was sustained among the hens throughout the breeding season, through injuries caused by the cocks and through injuries and lesions of the ovarian organs, due to the excessive strain of heavy egg-production. The average production per hen, from April 1 to June 30, was over 40.

With the distribution of the brood stock the operations at the station came practically to a close, but a considerable amount of general farm work was carried on through the summer and early fall, in anticipation of next year's activities. The year closed with part of the coming season's brood stock on hand, 201 pheasants from the Sandwich Bird Farm.

Marshfield Bird Farm

Toward the end of 1924 a yard was commenced designed to hold brailed stock, but freezing weather delayed its completion until the late spring of 1925. It encloses a large area, and contains some 1,600 feet of fence 7½ feet high, constructed with a view to preventing anything from digging under. The first 1½ feet above ground are of creosoted boards; the next 3 feet of fine mesh wire; and the remainder of 1½-inch mesh wire, finished at the top with 2 x 4 planed. Being designed for brailed stock it is uncovered. Shelters and hiding and nesting places of boughs were built all over the yard, and the stock turned loose; but the rivets on the brails proved not strong enough, the birds opened them with their bills, and a number of pheasants escaped. Traps were set and a good many were recovered. This failure of the brails made necessary the recapture and rebrailing of the brood stock, and their return to the old yards, which set them back at least three weeks on laying. All through the summer the problem of a better brail was studied, and in early fall a special tool and a strong new rivet which the birds cannot remove, were designed by the superintendent.

Land was dressed, plowed and laid down to clover and planted to green stuff for the birds in the spring, and the yards spaded and limed. The pens were filled with from 6 inches to 2 feet of loam, this being necessary since the pens, originally designed for duck pens, are on low land. These yards have always been used the entire year, beginning with the brood stock for winter and young stock for summer, with no period of rest. It is planned to let them lay over the winter unused. Late in the summer when the hardest work of the season was over the yards in front of the houses on the hill were completed, giving four houses with yards similar to the large one, but of wire of smaller mesh to permit colonizing young birds there if necessary.

The year opened with 804 adult pheasants on hand as brood stock, which was reduced, by losses of 41 and distribution of 159, to 604 by the opening of the laying season. There were 15,627 eggs collected, and at the end of the egg-laying period all the adult stock was released. This was done with the intention of changing the entire stock, as the brood stock has not been replaced, as a whole, since starting with the incubator stock several years ago. There were 15,525 eggs set, 7,793 birds hatched, and 1,738 reared, of which 306 were distributed to the covers, 159 sent to clubs to be held over winter and liberated in the spring as adults, and 1,273 transferred to the adult stock.

The adult stock is accounted for as follows: on hand at the beginning of the laying season, 604; increased by stock purchased, to 704; and by addition of the 1,273 birds of the present year's hatch, to 1,977. This adult stock was disposed of thus: 133 lost (115 lost experimenting with the brail), 464 distributed after close of laying season; 600 reserved for brood stock; 100 sent to the Wilbraham Game Farm; 100 held for brood stock at Wilbraham, 199 held for brood stock for the Ayer Rearing Station; and 381 held for distribution in the covers in the spring as adult stock.

Sandwich Bird Farm

A small balance from the previous year made it possible to enlarge the large wintering and breeding yards to the extent of adding a 20 x 300-foot section on the easterly side; to complete the cementing of the floors of the brooder houses; and accomplish various other small matters, so that the station seemed better equipped than ever before to handle the stock. But as the season advanced the brooding space proved insufficient, which handicapped the work to some extent. Soon after this, funds contributed by the fish and game clubs became available, and with a portion of it (and salvaged lumber from Carr Island), additional quarters were provided by converting six chicken houses into brooder houses with new covered yards in front, making a continuous divided yard 120 x 30 feet in size. From the extreme southerly corner of this covered yard was constructed an open yard 8 feet high, suitable for brailed birds. From the southeasterly corner of this latter yard, another open yard was extended southerly and parallel with the original brooder pens, and utilizing one side of the latter as part of the yard, completed this second open yard of about 500 x 60 feet.

The year opened with 532 adult birds on hand as brood stock, which was reduced, by losses of 17, to 515 at the beginning of the laying season. There were 16,031 eggs collected and set, 8,848 birds hatched, and 5,151 reared, of which 1,791 were distributed to the covers, 2,298 sent to clubs to be held through the winter for liberation in the spring, 306 sent to the Wilbraham Game Farm, 242 distributed as adults to the covers, 4 sent out to be held through the winter, 201 sent as adults to the Ayer Game Farm, and 309 added to the brood stock.

The adult stock is accounted for as follows. On hand at the beginning of the laying season, 515; lost, 26; distributed to the covers, 228, reducing it to 261. The addition of the 309 birds of the present year's hatch, and 25 purchased, brought the brood stock at the end of the year to 595.

Through the courtesy of Judge Lee Miles of Arkansas 24 quail were received, but they did not stand the trip well, and nearly all died soon after arrival.

Wilbraham Game Farm

With the greatest regret we record the death of Superintendent Joseph H. Mosher on July 21. In the passing of this veteran game breeder the Commonwealth lost a valuable and conscientious employee, and the sportsmen a friend to whom, whether they were aware of it or not, they owed a debt of gratitude for the up-keep of their sport. Mr. Mosher's connection with game breeding dates from 1898, when he entered the employ of the State, working at the Winchester Hatchery with Commissioner Brackett on the task of introducing the pheasant as a game bird into Massachusetts. Upon the establishment of the Wilbraham Game Farm in 1912 he was made superintendent, and his work has been cut short just at the time when his experience and skill were beginning to count the most. It is fortunate that

through close association with the work over many years Mrs. Mosher has, to a certain extent, fallen heir to the knowledge which he gathered, and she was appointed as superintendent of the game farm on August 1.

During the winter months all building, replacement and repair work was attended to. There were built for future use five 10 x 20-foot brooder houses (four floored with cement), divided into sections, each with a yard. Four of the yards are 20 x 48 feet and the other six 20 x 36. Through the courtesy of the Paper City Rod and Gun Club (by a contribution made late in 1924) there were added to the equipment one 10 x 20-foot house with two 20 x 48-foot yards, without cement floor. Considerable green food was raised and stored for winter use of the birds.

The year opened with 631 adult pheasants on hand as brood stock, to which were added 38 purchased birds. Distribution of 23 and loss of 20 brought the number to 626 at the beginning of laying time, and 23,144 eggs were collected. There were 22,960 eggs set and 8,033 birds hatched. Very early in June an epidemic of some unknown disease attacked the young birds between three and four weeks of age, which as far as could be determined by observation proved fatal in every instance. Previous to this the losses among the young chicks had been small compared with other years. Every precaution was taken to prevent the spread of the disease, without any visible result. A certain per cent of a hatch would be diseased, and the remainder immune. In one pen the birds would appear to be healthy, and in the next pen, separated only by a wire netting, almost all of the chicks would be lost. After everything possible had been tried to determine the cause of the disease, the conclusion was reached that a part of the brood stock was infected with bacteria which was transmitted to the young through the egg, and developed to a fatal stage in the chicks at about four weeks of age.

The losses from this epidemic were 5,541 birds, and 71 were lost and unaccounted for (due no doubt to the confusion attending the sudden illness and death of the superintendent), reducing the number reared to 2,421. Of these 2,336 were distributed to the covers, and 85 remain on hand for later distribution. On account of the possibility of disease, none were kept for brood stock.

To the adult stock of 626 with which the laying season began there were added 300 from the East Sandwich Bird Farm, 97 from the Marshfield Bird Farm, and 100 purchased. Deducting losses of 62 and distribution of 575 there were 486 left on hand at the close of the year.

Amherst Rearing Station

Using a portion of the funds contributed by the clubs, changes were made in the ponds to increase their capacity for carrying over a selected stock of fingerlings to be liberated next year as fish large enough to be caught when planted. This work was confined to building five new ponds, 6 concrete and 2 wooden dams. Minor repairs and additions were made to the dwelling house. The station was opened February 23 to prepare to receive stock.

Brook Trout. — Stock for rearing was received as follows: fry — from the Montague Rearing Station, 200,000; from the Palmer Hatchery, 273,000; from the East Sandwich Hatchery, 200,000; fingerlings — from the Palmer Hatchery, 5,000; from Montague Station, 10,000; yearlings — from Montague Station, 800 (6-inch); from Sutton Hatchery, 2,500 (5-7 inches).

The work of the station proceeded without special incident, and the stock was disposed of as follows: 344,700 fingerlings planted in public waters; 4,000 to the Carter Pond Company in exchange for horned pout (see Fish Distribution); 18,000 held for distribution in the spring as yearlings.

There were planted in public waters 3,000 yearlings.

Brown Trout. — Brown trout were reared for the first time at this station, with very good results. The stock consisted of 16,000 fry from the Palmer Hatchery, and 760 fingerlings (1½ to 3½ inches) from the Montague Station. The entire

production of 8,000 fingerlings was set aside for brood stock, and there are on hand at the close of the year 7,760.

Loch Leven Trout. — There were 11,000 Loch Leven trout fry received from the Palmer Hatchery for rearing. This first experiment with this species at this station gave good results, and the 4,000 fingerlings which resulted were kept for brood stock.

Montague Rearing Station

Along with the general work four old-style hatching troughs were converted into sorting boxes; all dams were removed and holes in the sides and bottoms stopped up with lead; screens were made, painted and later set outside the cement foundations prepared last season; and covers were made and painted. Several hundred small pines were planted back of the ice house, and a few cedars and spruces along the brook.

With the funds contributed by the clubs, certain of the ponds were enlarged for the purpose of growing yearling fish, and some of the worn-out wooden dams were replaced with concrete. Other ponds were enlarged to get the maximum benefit from the water supply. Using lumber salvaged from the buildings on Carr Island a small camp was partly constructed, so that the fish messengers in charge of the distribution by truck could be accommodated on the premises, and the superintendent have a comfortable place in which to do the clerical work of the station in winter. When all of the fish had been distributed out of the main system, it was thoroughly cleaned and sterilized.

Brook Trout. — The year's work started early, to prepare the equipment to receive the egg supply. The 80,000 eggs taken at the station came along with only normal losses. To them were added 200,000 from the Sandwich Hatchery and 853,000 from commercial dealers, a total of 1,133,000. From them 931,000 fry hatched, of which 200,000 were sent to the Amherst Station. There were heavy losses during hatching in one lot of commercial stock. The remainder made rapid growth, with very small losses, and by the first of May it was necessary to distribute some of the larger ones, for the entire stock grew so well that the pools were crowded.

The year's production of fingerlings, together with 10,250 fingerlings ($3\frac{1}{2}$ to 6 inches) brought over from the year before, was disposed of as follows: 20,000 to the Sutton Hatchery, 10,000 to the Amherst Rearing Station, 8,000 to the Ashfield Fish and Game Association and 5,000 to the Worcester County Fish and Game Association for further rearing; 448,650 to public waters (which number included the 10,250 large fingerlings), and 15,000 remain on hand to be carried through the winter for distribution as yearlings in the spring.

The stock of adults and yearlings (1,000 on hand at the beginning of the year plus 9,750 from the stock of fingerlings brought over from last year) were disposed of as follows: 800 to the Amherst Rearing Station and 9,346 distributed to public waters.

Brown Trout. — From the Palmer Hatchery 10,000 brown trout fry were received and placed in one of the best rearing ponds; but, due to an underground spring, the pond lowered over night and most of the fry were lost. When the remaining 760 had reached $1\frac{1}{2}$ to $3\frac{1}{2}$ inches in size they were transferred to the Amherst Station for further rearing.

Miscellaneous Distributions. — There were sent to the Eastern States Exposition for exhibition purposes 100 fingerling brook trout (4-inch) and 48 adults (7 to 18 inches), which were afterwards planted in public waters.

Palmer Fish Hatchery

In the spring the rearing pools were put in order, having to some extent been affected by frost conditions. Late in the fall the bank between the bass ponds and the brook was strengthened by hauling in additional earth and stones preliminary to grading and facing up the brook side of the ponds and to prevent muskrats from digging through. During the late fall most of the bass ponds were

thoroughly cleaned, resulting in the removal of a large amount of vegetation. Before the freeze-up two concrete raceways were put in two of the bass ponds to replace worn-out wooden structures. Later in the year three additional concrete raceways were completed, leaving three more to be put in place. A larger water supply for hatching was secured by replacing the 4-inch pipe with a 6-inch one. Work in the remaining portion of the year was confined to the routine of the station.

Small-mouth Black Bass. — There was a very successful hatch of small-mouth black bass, and 96,000 fry and 55,400 fingerlings were distributed to public waters, as well as 75 yearlings.

Brook Trout. — Eggs were received as follows: 300,000 from the Sandwich Hatchery and 440,000 from commercial dealers. From the 740,000 eggs there were 703,992 fry hatched, of which 273,000 were sent to the Amherst Rearing Station and 170,000 to the Sutton Hatchery. Three hundred were furnished to Holyoke College for class use.

The stock of fingerlings was distributed as follows: 74,000 to the Sutton Hatchery, 5,000 to the Amherst Rearing Station, 6,000 to the Worcester Rearing Station, 15,000 to the Springfield Fish and Game Association, 68,300 distributed to public waters, and 300 remain on hand.

There were planted in public waters 5,630 yearlings.

Loch Leven Trout. — There were 50,000 Loch Leven trout eggs received through the courtesy of the U. S. Fisheries Station in Montana. They arrived in good condition, and hatched with a very small loss. To the Amherst Rearing Station were shipped 11,000 fry, to the Sutton Hatchery 3,500, and to the Sandwich Hatcheries, 3,600. The 7,700 on hand at the end of the year are being reserved for breeders.

Brown Trout. — There were 150,500 brown trout eggs purchased in New York, and 3,000 collected at the station. Of the fry hatched 16,000 were sent to the Amherst Rearing Station, 10,000 to the Montague Rearing Station, 10,000 to the Sandwich Hatcheries, and 13,400 to the Sutton Hatchery. The 15,000 on hand at the end of the year are being reserved for breeders. It is estimated that the losses from herons (of which 16 were trapped or shot) amounted to between 15,000 and 20,000.

There are on hand at the end of the year 600 yearlings and 5,628 adults.

Horned Pout. — Horned pout held in ponds at the station produced 14,000 fingerlings, which were distributed to public waters. There are on hand in the station ponds, for later distribution, 30,000 fingerlings (1½ inch) and 6,160 adults (6–8 inches) which were secured from the Carter Pond Company near the close of the year.

Blue Gills. — Blue gills numbering 800 (1 to 3-year-olds) were sent to the Stockwell Ponds for brood fish.

Miscellaneous Distributions. — There were sent out for exhibition purposes, and afterwards planted in public waters, the following: To the Eastern States Exposition, 150 fingerlings (3 inch) and 8 adult (12–15 inch) small-mouth black bass; 155 fingerlings (3 inch), 11 yearling (12 inch) and 4 adult (15 inch) brown trout; 165 2-year-old blue gills; 75 fingerling (3 inch) and 50 adult (8 inch) yellow perch; 150 fingerling (3½ inch) Loch Leven trout; 200 fingerlings (2–4 inch) and 35 adult (12 inch) horned pout; 11 adult (12 inch) pickerel. To the Worcester Fair, 150 fingerlings (2–4 inch) and 6 adult (12–15 inch) small-mouth black bass.

Sandwich Fish Hatcheries

At the East Sandwich Station four of the old wooden pools were rebuilt, making them into dirt pools. Other pools were enlarged and made into dirt pools by removing the board sides.

At Sandwich three large dirt pools (15 x 200 feet) divided into six ponds by dams placed across the center of each, were constructed and paid for by the money contributed by fish and game associations. Six wells were driven to supply them

with water. These ponds are for the purpose of rearing the stock to larger size before planting.

Brook Trout. — In the fall of 1924 there were 1,843,000 eggs collected, hatched and reared with no unusual incidents. There were 50,000 eyed eggs planted in brooks for natural hatching, and to the other stations were sent: to Palmer Hatchery, 300,000; to Montague Rearing Station, 200,000. Fry: to Sutton Hatchery 180,000 (1-inch); to Amherst Rearing Station, 200,000 (1-inch); fingerlings: to Dighton Rearing Station, 10,900 ($1\frac{1}{4}$ to 3 inch); to Canton Rearing Station, 26,000 ($1\frac{1}{4}$ to 2 inch); to Worcester Rearing Station, 44,800 ($1\frac{1}{4}$ to $1\frac{1}{2}$ inch); to Peabody Rearing Station, 26,000 (3 to $3\frac{1}{2}$ inch); to public waters, 227,800 (3-inch); and at the close of the year there are on hand 75,850 for rearing to yearlings for spring distribution, and 10,000 which are held for brood stock. There were distributed 13,075 yearlings and 2,377 adults, and 7,828 yearlings and adults remain on hand.

Brown Trout. — There were received from the Palmer Hatchery 10,000 brown trout fry for rearing. This was new work, tried as an experiment, and not particularly successful. The resulting 472 fingerlings will be held for brood stock.

Loch Leven Trout. — There were 3,600 Loch Leven trout received from the Palmer Hatchery for rearing. Results were better than with the brown trout, and 3,359 fingerlings are being held for brood stock.

Chinook Salmon. — From the California Fish and Game Commission 100,000 Chinook salmon eggs were received (in exchange for brook trout eggs bought from dealers) from which 61,000 fingerlings (3-4 inch) were reared and planted in public waters.

Sutton Fish Hatchery

At the close of 1924 the wooden nursery pens at the hatchery were removed and ponds to cover the same area were started. Concrete divisions for these ponds were built in December, utilizing the old concrete foundations for the pens. This change resulted in larger and better fish from the same area and water supply. No further improvements could be made, except of very minor importance, as the time otherwise available for such work was taken up by distribution and work at the Stockwell Ponds.

Brook Trout. — Trout rearing started with a somewhat larger stock than that of the previous year, and gave nearly the same results. Stock was received as follows: fry — from Palmer Hatchery, 170,000; from Sandwich Hatcheries, 180,000. From these were raised 311,700 fingerlings, to which were added for further rearing 20,000 from the Montague Station, and 74,000 from the Palmer Hatchery, making a total of 405,700 to be handled at the station.

The drouth conditions persisted over fall, winter and spring, and made necessary a thinning-out distribution in June, about a month earlier than usual. This, however, resulted in better fish later in the season, and it was impossible to carry a large lot until the streams were flowing well, and to make a better selection to reserve for yearling stock for the next year.

The year's product was disposed of as follows: 31,000 to the Worcester County Fish and Game Association, 189,100 to public waters, and 36,000 remain on hand for rearing to yearling fish.

There were 2,500 yearlings sent to the Amherst Rearing Station and 2,100 to public waters.

Loch Leven Trout. — Loch Leven trout fry numbering 3,500 received from the Palmer Hatchery, were placed in the large pond to grow there with the brook trout, as had been tried with brown trout. They gave fair results, but did not make as satisfactory growth as did the brown trout. The entire 800 were retained at the station for brood stock.

Brown Trout. — There were 13,400 brown trout from the Palmer Hatchery placed in the upper west pond, but made a very poor start and slow growth. They appeared to pick up somewhat when some of the smaller trout fry, a more active-feeding fish, were put with them, but quite early in the summer a blow-out under the concrete let them down into the next pond among a lot of larger trout, and they

remained mixed until the end of the year and are still on hand numbering 1,200. This possibly resulted in a better growth, at the expense of numbers.

Horned Pout. — The horned pouts salvaged from Pond Meadow, Weymouth (See "Salvage" under "Fish Distribution") were brought to the Sutton Hatchery and thence distributed. 2,500 remain on hand for future disposition.

Miscellaneous Distribution. — There were sent out for exhibition purposes, and afterward planted in public waters, the following: To the Worcester Fair, 75 fingerling (5 inch) trout. To the Springfield Fair, 7 adult (15 inch) rainbow trout; 10 adult (10 inch) brook trout; 10 adult (7 inch) blue gills. To Leominster Fair, 10 adult (10 inch) brook trout, 15 adult (7 inch) blue gills, 25 adult (9 inch) yellow perch; 10 adult (15 inch) pickerel, 10 adult (9 inch) horned pout.

FIELD PROPAGATION

Pond Cultural Work

Shaker Mill Pond. — The Shaker Mill Pond project has proved unsuccessful and will be abandoned. This is through no fault in the general plan or in the equipment, but because water conditions have made it impossible to handle this pond profitably. Since the time the work was started the watershed has been almost entirely cut over, resulting in the extremes of flood or drouth. In the early spring there is so much water that it cannot be carried off through the spillway and gates, and many of the fish go over the dam. Later, during dry weather, the feeding stream dries up and the pond is reduced to a mere shallow pool. The movable equipment will be taken away for use elsewhere, and the remaining fish distributed.

Stockwell Ponds. — At the opening of the year (December 1, 1924) the work of the season at the Stockwell Ponds had not been completed. December was occupied largely in finishing the work, making the distributions and returning the brood fish to the ponds. While the ponds were down as many improvements as possible were made to facilitate the run of fish down the ponds, and their handling; the brush was cut out of the channel in the upper part of No. 2, and many logs and other obstructions that diverted the water were removed. The section of channel in the lower part of No. 1, the old mill pond, where the fish are concentrated for catching, was widened and deepened by sluicing the mud down through the trap.

The trap was protected from floating debris that rises from the bottom in great quantities when the pond has been drawn long enough to dry the unburned brush thrown on the bottom, by a plank shield built across the outlet, which holds the drift until a change of wind drives it up the pond. Following this work, cutting was resumed.

In the spring only necessary repair work was done. Much of the open land around the ponds was replanted with pine and spruce.

In the restocking of the ponds for 1925 some changes were made. The pickerel were concentrated in No. 1 pond, largely, to separate them from the blue gills which were segregated in No. 3 on account of the tendency of the fingerlings to drift out of the ponds, and No. 3 having the least outflow they would be less likely to work down among the pickerel, and could be readily let down to No. 2 when this pond is fitted for growing yearlings. Horned pout were put in all ponds, as they seem to fit in with any fish. Yellow perch were not returned to the pond for breeding, white perch being substituted. No results came from this trial. There was no evidence of breeding, and only 3 of the adult stock of 3,000 put in were found. This lack of success may have been due to bringing the fish from a very dissimilar type of pond, coupled with their arrival in a very exhausted condition at the beginning of very warm weather.

The breeding and rearing conditions as shown by drawing the ponds indicated that horned pout did well in all ponds, but made the best growth in No. 1. Pickerel produced a larger number of fingerlings, but of smaller size, and this production was nearly all in No. 1. In No. 2 the pickerel appeared to have been winter-killed, and the same happened to many of the blue gills left in this pond, and to some of the main stock left in No. 3, as was determined by many dead fish embedded in the

ice and seen as it melted, and many remains found on the bottom, where they had changed to a solid condition, instead of decaying. The loss of pickerel in No. 2 appeared to have been nearly total, due to abnormal drouth conditions and ponds freezing at a low stage of water. The blue gills bred well in No. 3, and this appears of all the ponds to be the best in which to breed them under control, and with the filling at the dam completed, screens installed, trapping and separating pools built below the dam, either fingerlings or yearlings can be produced as desired, and handled without loss.

The distribution for 1925 was started early, to handle a stock of fish that was expected to be larger, and taken from the ponds under greater difficulties. There were distributed between December 1, 1924, and November 30, 1925, 3,600 blue gills (2-4 inch); 67,800 horned pout (2-4 inch); 12,950 yellow perch (5 inch); 7,600 pickerel (4-6 inch); and at the close of the period covered by this report there are on hand 75,000 fish which have been taken from the ponds but not yet distributed, and remaining in the ponds a number of which no accurate estimate can be formed.

During the year the following was planted in the pond as breeding stock: 3,000 white perch secured by the salvage crew, and 800 blue gills from the Palmer Hatchery.

FISH AND GAME DISTRIBUTION

FISH DISTRIBUTION

The method of distributing the stock raised at the fish hatcheries, or secured by salvage, differed but little from other years, though a few changes have been made which should be productive of better results. As usual, many clubs called at the stations for their allotments. In the western part of the State, trucks were used to transport fish to remote sections, train service on several lines having been discontinued. The cost of fish distribution was \$4,510.20.

Distribution tables appear at the end of this section, to which reference is made to supplement the following reports on the various species.

Brook Trout. — Fifty thousand eyed eggs were planted in two brooks as a special experiment, and produced good results. This method of egg-planting is successful if care is taken to place them in shallow spring feeders, where there is no rapid rise from heavy rainfall or melting snow.

Fewer fingerlings were distributed than in other years, on account of the number reserved for rearing to larger size. Recognizing the general demand from the sportsmen for the planting of fish of larger size, definite steps were taken to bring about such a distribution next spring. Rearing pools were altered and some new ones constructed, and 145,150 selected fingerlings are being held at the stations for distribution in the spring as yearling fish, most of which will be large enough to be caught when planted. From now on it will be our policy to reduce the present facilities for producing fingerlings, and wherever practicable converting waters now used for that purpose into pools for yearlings. In other words, to aim at the maximum production of yearlings and the minimum of fingerlings, while operating all stations at capacity.

Brown Trout and Loch Leven Trout. — Without intending to start any controversy as to the difference between the brown trout and the Loch Leven trout, we have fallen into the habit of referring to the eggs and resulting fish from stock obtained in the eastern part of the country as "brown trout," and the eggs and fish received from the U. S. Bureau of Fisheries stations in the western states as "Loch Leven." Our experience of the past year has shown that the western eggs have greater vitality and the young fish feed more readily and grow better than the stock from eastern sources. Our past experiences with the eastern eggs at the Palmer Fish Hatchery having been unsatisfactory, we divided the fry hatched at the Palmer Station among the other stations for rearing in order to compare the results. Collectively we produced more fish by this plan, though the experience at practically every station was that the western eggs seem to be superior in every respect.

For several years we have been trying, with very indifferent success, to build up a brood stock of brown trout in order to have an independent supply of eggs. From now on our efforts will be devoted to the Loch Leven or the western fish.

Except for a small number exhibited at the Eastern States Exposition and thence planted in public waters, no distribution of such trout was made this year, the entire product being held for brood stock.

Rainbow Trout. — No rainbow trout were purchased on account of lack of funds, but arrangements have been made for securing a supply of eggs for 1926 hatching by an exchange of brook trout eggs with the U. S. Bureau of Fisheries.

Chinook Salmon. — The Chinook salmon produced at the Sandwich Hatcheries were planted in the following ponds: Peters Pond, Sandwich; Cliff Pond, Brewster; Sheep Pond, Brewster; Ashumet Pond, Falmouth and Mashpee; Grigson's Pond, Barnstable; Bloody Pond, Plymouth.

White Perch. — A new method was adopted in the distribution of white perch, since our stocking operations over a period of years, while successful to a certain degree, have not been as fruitful of results as desired.

When the fish have been put out on individual applications, leaving the applicant to select the pond in which to deposit them, a wise choice has not always been made, since applicants have failed to consider such important points as the nature of the ponds, their importance as fishing waters, the comparatively small outlets which would prevent the fish from leaving the waters, the matter of screening the outlet, and the need of repeated stockings to get the desired results.

By the new plan a group of about twenty-five ponds, representing all parts of the State, was selected for intensive stocking, and each pond received several shipments, which were handled between the railroad station and the pond by the local fish and game club, accompanied by the district warden to insure their liberation in the waters selected. By this concentration on a limited number of ponds more satisfactory results will undoubtedly follow. Next year another series of ponds will receive attention, and so on, in this way eventually stocking heavily every pond suitable for white perch.

Much time was devoted to classifying and selecting the white perch ponds. The stock for distribution was secured in the usual way by the salvage unit.

Salvage Work. — Due to lack of funds the regular salvage crew operated this year only at Tashmoo Pond on Martha's Vineyard. This is the first time since 1922 that the pond has been fished, and 133,900 adult white perch (4 to 6 inches) were secured. Of these, 3,000 were sent to Stockwell Ponds as brood fish, and the remainder distributed. The number collected is proof that this pond is not fished out, and that the policy of letting the pond rest at intervals is the proper one. The ponds selected for intensive stocking with white perch are: Garfield Lake, Monterey; Center Lake, Becket; Davol Pond, Westport; Sasquin Pond, New Bedford; Baldpate Pond, Boxford; Chebacco Lake, Essex-Hamilton; Foster's Pond, Andover; Ashfield Pond, Ashfield; Forest Lake, Palmer; Hazzards or Russell Pond, Russell; Watershop Pond, Springfield; Goshen Reservoir, Goshen; Quabbin Lake, Greenwich; Massapoag Pond, Dunstable-Groton-Tyngsboro; Quannapowitt Lake, Wakefield; Long Pond, Littleton; Whitehall Pond, Hopkinton; Upper Mystic Lake, Winchester; Massapoag Pond, Sharon; Mirimichi Pond, Plainville-Foxboro; Robbins Pond, East Bridgewater; Long Pond, Plymouth; Mary's Pond, Rochester; Snow's Pond, Rochester; Browning Pond, Oakham; Queen Lake, Phillipston; Bad Luck Pond, Douglas; Lower Naukeag Lake, Ashburnham; Wallum Pond, Douglas.

Various small salvage jobs by wardens and superintendents yielded the following stock, planted as a rule locally, or used for exhibition purposes at fairs and thence distributed. Horned pout: from Pond Meadow, Weymouth, 18,500 (2 inch); from Haynes Reservoir, Leominster, 422 adults (8 to 10 inches); from Rockwell's or Wheatland's Pond, Topsfield, 50 (4 inch); from Creighton's Pond, Middleton, 1,005 (5 inch-10 inch); confiscated from a fisherman, 65 adults (4 to 8 inch). Pike perch: from Lake Massapoag, Sharon, 6 adults. Small-mouth black bass: from Meeting House Pond, Westminster, 31 (8-14 inch); from Shuttle

Shop Pond, Sutton, 5 adults (10-inch). Large mouth black bass: from Shuttle Shop Pond, Sutton, 10 adults (10-inch). Yellow perch: from Indian Lake, Worcester, 15 adults (9-inch); from Chauncey Lake, Westborough, 15 adults (9-inch); from Barker's Brook, Pembroke, 81 adults. Pickerel: from Shuttle Shop Pond, Sutton, 25 adults (17-inch). White perch: from Indian Lake, Worcester, 25 adults (8-inch); from Chauncey Lake, Westborough, 100 adults (8-inch).

Small-mouth Black Bass. — The bass distribution was handled on the same plan as that of the white perch. The ponds selected were: Gull Pond, Wellfleet; Onota Lake, Pittsfield; Garfield Lake, Monterey; Sabatia Lake, Taunton; Foster's Pond, Andover; Four Mile Pond, Boxford; Flax Pond, Lynn; Nile's Pond, Gloucester; Ashfield Pond, Ashfield; Brown's Pond, Thorndike; Ashley Pond, Holyoke; Hampton Pond, Westfield-Southampton; Norwich Lake, Huntington; Walden Lake, Concord; Baddacook Pond, Groton; Lake Pearl, Wrentham; Ponkapoag Pond, Canton-Randolph; Morse's Pond, Wellesley; Snow's Pond, Rochester; Maquan Pond, Hanson; Jamaica Pond, Jamaica Plain; Silver Lake, Athol; Lashaway Lake, East Brookfield; Spectacle Pond, Lancaster.

A good deal of time was spent in classifying and grading the bass ponds to put this plan into operation. The product of the Palmer Hatchery plus a small number salvaged comprised the stock for planting.

Blue Gill. — The Stockwell Ponds furnished the blue gill stock for distribution. (See "Field Propagation.")

Horned Pout. — The stock for distribution comprised the fingerlings raised from brood stock in ponds at the Palmer Hatchery, fish from the Stockwell Ponds, and the product of miscellaneous salvage jobs.

Toward the close of the year a supply of fingerling and adult horned pout was secured from the Carter Pond Company (in exchange for 4,000 brook trout fingerlings from the Amherst Station) and placed in ponds at the Palmer Hatchery for spring distribution.

Pickerel and Yellow Perch. — The pickerel and yellow perch distributed were taken from Stockwell Ponds, together with a few adults from the Palmer Hatchery exhibited at the Eastern States Exposition and afterwards distributed.

Alewife. — In the work of restoring depleted alewife fisheries spawning adult alewives were planted as follows: Ipswich River, Ipswich, 1,750; Monponsett Lake, Halifax, 1,896; Lake Nippenicket, Bridgewater, 1,509; Carver Cotton Gin Company Pond, Bridgewater, 129.

Fish Distribution to Public Waters, 1925

	Product of State Hatcheries	Not Hatchery Product (Sein- ing, Gift, Pur- chase, etc.)
Brook Trout:		
Eggs	— ¹	—
Fingerlings	1,278,725	—
Yearlings and adults	35,596	—
Brown Trout and Loch Leven Trout:		
Fingerlings	305	—
Yearlings and adults	15	—
Small-mouth Black Bass:		
Fry	96,000	—
Fingerlings	55,700	—
Yearlings and adults	89	36
Horned Pout:		
Fingerlings	82,000	18,550
Adults	45	1,492

¹ 50,000 eyed eggs planted in brooks.

Fish Distribution to Public Waters, 1925 — Concluded

	Product of State Hatcheries	Not Hatchery Product (Sein- ing, Gift, Pur- chase, etc.)
Chinook Salmon:		
Fingerlings	61,000	—
Yellow Perch:		
Fingerlings	13,025	—
Adults	75	111
White Perch:		
Adults	—	131,025
Blue Gills:		
Fingerlings	3,600	—
Adults	190	—
Pickarel:		
Adults	7,621	25
Alewives:		
Adults	—	5,284
Miscellaneous species:		
Wall-eyed pike perch adults	—	6
Rainbow trout adults	7	—
Large-mouth black bass adults	—	10
	1,633,993	156,539

Trout Fingerlings (1 — 3-inch) Distributed to Clubs for rearing to larger Size before Liberation

Ashfield Rod and Gun Club	8,000
Canton Fish and Game Protective Association	26,000
Dighton Fish and Game Club	10,900
Peabody Fish and Game Association	26,000
Springfield Fish and Game Association	15,000
Worcester County Fish and Game Association	86,800
	172,700

GAME DISTRIBUTION

Pheasants. — The new Ayer Game Farm was in operation for the first time as an egg-producing farm. From it, persons interested in hatching and liberating pheasants to help along the work of stocking the covers, received eggs of the first quality. After egg-laying season the breeders were turned loose to produce a brood in the open.

A new policy has been inaugurated in the distribution of pheasants from the State game farms, which marks a distinct advance in the history of game production in Massachusetts. There is a strong demand on the part of the sportsmen for fewer partly-grown pheasants and for more adults, and unquestionably the best results come from the matured birds. To meet this demand plans have been laid for holding through the winter, for spring liberation, as much of the young stock as the stations can be made to accommodate. Lack of appropriation made it impossible to provide the required quarters this year; but from donations by the fish and game associations it has been possible to make a good beginning on the new plan in the way of construction work. Large yards have either been built or are now under construction at the farms, and with the exception of those birds the

clubs wish to winter, the majority of the birds of next year's hatch will be held at the farms and liberated as adult stock the following spring.

The fish and game associations (which in 1924 were asked to take the late-hatched birds and carry them over winter) were this year encouraged to do the same by the allotments of young birds sent them during the summer distribution. Several clubs have now permanent arrangements for this work, which is a valuable supplement to the work of the State game farms and holds possibilities of further development.

White Hares. — White hares were imported as usual from Maine for stocking the covers. Those purchased were obtained with considerable difficulty, for there was a scarcity of hares in the section from which they are trapped, due perhaps to the extremely open winter, or perhaps to disease. It is aimed to delay the liberation of these hares as much as possible until after the shooting season closes, so that they may have an opportunity to breed once before facing the hazards of an open season. This was accomplished to a greater degree than the previous year, 313 being liberated after our season closed.

Miscellaneous Distribution. — There were purchased 297 cottontail rabbits and 154 quail, distributed as follows: Watuppa Reservation, Fall River, 63 cottontails and 23 quail; Penikese Island, 79 cottontails and 59 quail; Marthas Vineyard, 69 cottontails and 22 quail; Nantucket, 61 cottontails and 20 quail; Mattapoissett, 25 cottontails; Worcester, 16 quail; Ipswich, 14 quail.

The cost of game distribution was \$1,590.59.

Game Distribution to the Covers, 1925

	Product of State Hatcheries	Not Hatchery Product (Purchase Gift, etc.)
Pheasants:		
Eggs	- ¹	-
Young	4,433	-
Adult	2,039	-
Cottontail Rabbits:		
Adult	-	297
White Hares:		
Adult	-	1,062
Quail:		
Adult	-	154
	6,472	1,513

¹ 12,333 pheasant eggs were distributed.

Pheasants distributed to Clubs to be reared to Adults for Spring Liberation

39 fish and game associations cared for	2,385
4 individuals cared for	76
Total pheasants wintered	2,461

MARINE FISHERIES

INSPECTION OF FISH

That the people of the Commonwealth are eating more fish per capita than any other state in the Union, and also that the quality of fish as a whole brought to the dinner tables of the families of the old Bay State is of the highest, is evidence of the results attained by the work of this office as shown by the facts disclosed by

authentic reports. The quality statement also includes fish shipped from Massachusetts ports to consuming centers in other states. In other words, Massachusetts is making good not only in quantity but in quality fish production.

A survey of the daily reports of the work of this office shows that probably this year's landings of fish at Massachusetts ports are the largest of which there is any record. In addition to this, the receipts of fish for food distribution in Massachusetts from other countries and other states has been also very heavy. Ninety-five per cent of these totals, possibly aggregating between 200 and 250 million pounds, has come within the inspection scope of this office. It is pleasing to note the decrease in the amount of fish condemned as unfit for food, and this in the face of more numerous inspections than the previous year.

The office works in very close co-operation with the fish dealers, large and small. It is in daily touch with them. It knows their troubles. It is able to visualize them from the practical standpoint and therefore perhaps is in a position to accomplish more than if it held itself in a position apart from those with whom it has to do business. Co-operation is indeed mutual to a great extent and many problems and unfortunate situations are very expeditiously and properly solved without recourse to law.

In accord with its usual yearly program, inspection at producing points and in fish-selling cities and towns all over the State has been as frequent as possible with the force of one inspector and two deputies; indeed, more inspections were made this year than last.

There is some improvement in general conditions as far as the quality of fish is concerned in the retail stores throughout the State. The majority of the dealers are co-operating with this office and are freely adopting suggestions in regard to the care and handling of fish.

Court Cases

During the Lenten season this past year it was decided to conduct a campaign against dealers who have been considered negligent in the handling and marketing of their fish. In order to carry on this work deputies were obliged to jump from town to town and make inspections where it was thought necessary — that is, inspections were omitted in many stores that had a good reputation. During the seven weeks of Lent fifteen complaints were made against dealers found exposing fish at retail for food of a quality contrary to law, resulting in fifteen convictions. A similar campaign was made in the fall of the year, resulting in ten complaints and nine convictions, making a total of 25 complaints and 24 convictions. The Court has upheld us in our work, in many cases praising the work of our office and imposing a stiff sentence.

Speaking of cases brought to Court, the inspector this year, as last, takes occasion to publicly bring attention to the attitude of the judges. These officials, almost without exception, seem to quickly grasp the seriousness and importance of a "poor fish" case; view the matter with regard to the welfare of the public together with a consideration of the law that is a legal backing up of the work of this office. Indeed, in many cases which were met with sentence of conviction from the mouth of the presiding justices, there followed statements to the defendant so direct as to leave no doubt as to judicial opinion on the case in point and of any person guilty of selling fish unfit for food consumption to any one.

Inspection at Producing Points

The work of personal inspection of fisheries affairs at many producing ports of the State has been done as usual by the inspector, Provincetown, Chatham, Woods Hole, Wareham, New Bedford, Nantucket, and Marthas Vineyard, as well as Gloucester and Boston, being visited. At each of these points it seemed, speaking generally, that fares were landed with fair regard to freshness and quality.

The work of inspection at Gloucester for the season beginning May 1 and ending October 1 has as usual been undertaken by the inspector himself, this being made necessary owing to the small force with which this office has to work. The in-

spector was called to look over many million pounds more than the previous year. The condemnations of fish were less than the previous year.

Work Accomplished

Inspections in retail stores, 2,107.

Inspections in wholesale stores, 18,300.

Freezer inspections, 328.

Inspections of peddlers' carts, about 300 weekly at Boston Fish Pier.

Inspections at Yarmouth, N. S. steamer, 108.

Vessel inspections at Gloucester, 204.

General inspection trips, 9.

Fish condemned at Boston Fish Pier from vessels, 20,103 pounds.

Fish condemned at Gloucester, direct from vessels, 214,000 pounds.

Fish condemned in retail stores, 3,245 pounds.

Condemned at Boston Fish Pier from the Yarmouth, N. S. steamer, 250 pounds shark, 610 pounds horse mackerel.

Condemned at Fish Pier from consignments on Yarmouth steamer: graded as "jellied," 22 swordfish — 5,662 pounds.

Condemned, landed at Boston from Canada by rail and steamer, 1,087 pounds smelts; 500 pounds pickerel.

Condemned, landed at Boston Fish Pier: arrived by rail, 1,280 pounds flounders; 425 pounds pollock; 615 pounds bonita; 150 pounds mackerel; 1,190 pounds horned pout; 1,225 pounds sardine herring; 35 pounds butters.

Condemned, landed at Boston Fish Pier: graded as "jellied," 89 swordfish — 20,103 pounds.

Total amount condemned at Boston Fish Pier and at Boston from Canada by rail and steamer, 33,132 pounds.

Total inspections, 21,356.

Total fish condemned, 283,509 pounds.

Total court cases, 25.

Total convictions, 24.

Blackstone Street Fish Market

It is heartening to observe the present condition of the Blackstone Street outdoor fish market in Boston which is carried on each Saturday afternoon and evening throughout the year. When this market first came under the ken of fish inspection, some six years ago, fourteen carts were operating and the quality of fisheries goods offered to the public for food was of the lowest imaginable quality. At this point this office made a stand, introduced strict inspection on every day and evening the market was opened, with the result that today less than one-half the carts are now operating that were there before the fish inspection law came into operation; also the quality of the goods has advanced to the point where today Blackstone Street, "the poor people's fish market," offers on the whole and on the average as good goods as the average market throughout the Commonwealth of Massachusetts. True it is that in some instances goods below the desired quality are found. In these cases the fish are quickly condemned and removed from the zone of human consumption. When it is realized that during the past year, with inspection every day and afternoon that the market was open, fish unfit for food were found but twice, the general improvement in quality can be easily visualized.

Work at Freezing Plants

More time and attention has been given this year than for some previous to fish food goods going into the freezers. The goods generally put into freezers have been of a high quality. One or two cases have been reported to the office where goods taken in were not up to a high standard and the offender promptly notified. It is unfortunate that the office has not at its command sufficient deputies to cover and supervise all such cases as these.

A Very Important Case

Probably one of the most important cases with which this office has had to deal for the year centered about the arrival at the Boston Fish Pier on Sunday, June 28, of the Swedish Steamer Tampen, Captain F. R. Haruve, hailing from Allesund and bringing, consigned to Rowe & Sullivan by the Atlantic Coast Fisheries Company of New York City, a cargo of 83,381 pounds of fresh halibut which were caught off the coast of Iceland by a fleet of four steamers operated by a concern in Sweden. The Tampen, acting as a runner for this fleet, collected the catches of the four crafts and in accordance with a preconceived business plan brought the same to the Boston market for sale. The possibilities were great. Could it be shown that fish from this far-off country could be laid down in Boston and sold at a less price than the Class A stock landed by our own vessels from short trips, there was no question but what the local halibut market would have come in for a considerable disruption and change-over.

As it turned out, however, the length of time it took the steamer to arrive figured out fully as much as the time taken by one of our own halibuters to make a whole trip to Georges and other grounds, therefore it became a question of quality.

The steamer was, as far as could be ascertained, 19 days in making the passage, being obliged to stop and re-coal at a Nova Scotia port, and then after heading for New York being diverted back to Boston, there to offer the trip for sale. On Monday morning, June 29, the fare was sold to the New England Halibut Company and O'Hara Brothers Company for 16c per pound for whites; 10c per pound for grays and 8c per pound for large grays, and the discharge of the cargo was begun forthwith under the inspecting eye of this office. Some 10,000 pounds were all that were taken out the first day, and these fish as far as this office could judge were number one goods, but for reasons unknown to this office and over which it had no control, shortly after the 10,000 pound point was reached, no more were taken out for the day.

All this time naturally the fish were growing older, so that on June 30 when the discharge of cargo was again started at 10.30 A.M. to the same concerns but few cartloads were taken out when in the opinion of the deputy fish inspector it became necessary to call a halt in the proceedings and to decide after close examination of fish then swayed out and also in the hold, that they had dropped to what is known as number three classification, which means that under law they were fit only for salting, smoking or otherwise preserving, and not for sale as fresh food fish. According to this decision no more fish from the steamer were taken out for shipment as fresh food fish.

Later the taking out of the trip was resumed, the rest of the fare going over the road by motor trucks to Gloucester, there to be flitched and salted and smoked, for which purpose the fish were in good order. Naturally with the decision of the deputy, the price dropped in accordance with the quality of the goods, so that the fish that went for flitching sold at five cents per pound.

It is not too much to say that but for the supervision and inspection work of this office, the fare might have gone on the market as food fish and been followed possibly by other trips from the Iceland grounds until there might have been built up a regular halibut service from Iceland. Had this been so, figuring the time it takes to catch a fare in Iceland waters and the length of time it takes for a steamer to lay the cargo down here, fully five weeks in all at least, the people of Massachusetts might have been placed in the position of being served with an inferior grade of goods, while absolutely new fish, the catches of our own vessels, would have suffered a severe cut in price, and perhaps forced the local halibut fleet out of business. The above statement is made conservatively all the way through and the wisdom of the work of this office in the matter is left for the public to decide.

Conclusion

This office has recently been notified by one of the largest chain store companies operating in this State of its intention to sell fresh fish weekly at certain of its stores. It seems almost certain that this action will be duplicated by other chain

store factors. This being the case, it is easy to see the extra burden which will be placed upon the work of this office, for as is well known, the sales of fish through such an avenue as the chain store will result in a heavy increase of fish consumption. This gives this office an opportunity to stress the point which has so long been evident, namely, the need of a larger appropriation for salaries and expenses and more deputies.

COMMERCIAL FISHERIES CONFERENCE

It has long been the wish of this Division to bring about a closer relationship with the commercial fisheries interests. With this end in view a meeting was called June 12 at which were present some twenty men prominent in the fishing industry, e. g. captains of fishing fleets, packers and dealers on Boston Fish Pier, and the Deputy Commissioner of Fisheries for the Federal government. The various problems of landing, handling and distribution of deep-sea products were discussed. It was voted "That the State of Massachusetts be represented on the Federal Commission for studying the Atlantic Coast Fisheries." On motion the meeting adjourned to secure a larger attendance at a later meeting which would discuss the problems of —

1. Stopping the use of pitchforks on fish.
2. Stopping the sale of white perch and striped bass.
3. Protection of trawlers against gill netters.
4. Close season on flounders in Nantucket County.
5. Better quality of fish needed.
6. Educate the public to use of fish and proper method of cooking.

The second conference on July 24 was attended by about fifty persons, including Professor Samuel C. Prescott of the Department of Biology and Public Health of the Massachusetts Institute of Technology; William S. Downs, Secretary of the Middle Atlantic Fisheries Association, New York City; legislative representatives from several districts; in addition to fishermen, packers and dealers. After an extended discussion the meeting closed, voting that "It is the sense of this meeting that the State inspection of fish be extended to the salt and pickled fish industry."

THE DEEP SEA FISHERIES

It is pleasing to be able to state that the marine fisheries of Massachusetts for the year 1925, for the fishermen themselves, and the dealer and the shipper as well, can without question be certified as "successful," thus showing that the industry as a whole is not only on the upward trend, but has arrived at a point where it is almost safe to say, with all due deference to the good old days of the past, it is doubtful if the fishing industry of the State as a whole was ever on a better or more successful business operating plane. The volume of fish landed and the accruing value thereof during 1925 was really unusual, and it is doubtful if the equal amount of catch and value received has been shown in any one year of the past history of the fisheries of this State. The catch was probably larger than any year since statistics have been kept.

The mackerel season provided a record-breaking epoch in the history of this fishery; many new crafts were added to the fishing fleet; few branches of fishing showed a decrease from the preceding year; indeed, the whole fishing industry from the man who pulls the line to the firm that sells the fish was one of increased prosperity. True it is that the fresh halibut and swordfishing branches showed a slight falling off in catch. This of course is more noticeable because of the fact that these two species command the highest prices in the local market of any fish caught and landed by the Massachusetts fleet. Nevertheless the diminution of catch from both these fleets, while enough to cause some concern, is still not sufficient to warrant the assertion that these fisheries are "going down hill."

Two factors of vast importance enter into any review of the fishing field of 1925 that is, the canning and the filleting of fresh fish. The production of these two branches has met with popular favor by the fish-consuming public, so much so that even the increase of production is inadequate at times to meet the demand.

Another feature of the year is the marked increase in the fleet of so-called "baby" trawlers. These crafts, gasoline-engined, built for speed as well as for combating with rough weather, are equipped with an otter trawl. They drag over grounds contiguous to the Massachusetts coast and make their trips generally in one or two days. So large is this fleet that the Boston Fish Pier is able, under any ordinary conditions, to provide for its customers almost daily the most absolutely freshest of fish.

Sizing up the fish situation of Massachusetts as a whole, it can be said that the catch has seldom if ever been larger, the quality has never been better, trade has markedly increased in both the fresh, frozen, salted, smoked and pickled lines, the whole industry is on a better business basis, there is a better understanding between the dealers themselves and also between the dealers and the fish-consuming public. All in all, the year 1925 is one that will be long and pleasantly remembered by those in any way connected with the fisheries of Massachusetts.

In Massachusetts fisheries history since the landing of the Pilgrims, the mackerel fishery has always held a place of major importance. In 1883, 1884 and 1885 this fishery reached its apex, the catch in 1884 marking up the high total of 478,000 barrels salted. This figure, as compared with the present total of 204,000 barrels of fresh and 12,500 barrels salted, seems a poor comparison, but let us pause for a moment and look over the situation. In 1884, when this enormous total was made, the fleet comprised something like 500 sail. Part of the year was spent along the coasts of Massachusetts and Maine and in the Bay of Fundy and the other part in what was known in these days as "The Bay"; in other words, in the Gulf of St. Lawrence. For the season of 1925 it is figured that but some 91 crafts engaged in the mackerel fishery. Outside of a few weeks in southern waters and on the Cape Shore they confined the limit of their fishing operations to grounds contiguous to the coast of Massachusetts and there corralled this wonderful total. Therefore there is ground for the statement, made at the opening of this story, that never before have the fishing grounds contiguous to the Commonwealth of Massachusetts been visited by such a vast shoal of mackerel as deigned to honor it by their presence in 1925. This statement is verified by the reports of those most competent to judge, namely the captains of the mackerel fishing crafts. These men, schooled in the mackerel game and with years of experience, some of them having been masters for much over a quarter century, have no hesitation in saying that never in all their "goin' fishin'" have they seen such enormous and so many schools of mackerel as visited the waters contiguous to the Massachusetts coast during the season of 1925.

There are several things that come to mind in connection with a review of these fisheries for the State for 1925. It is admitted that both the swordfish and halibut fishery showed a falling off and have for the past three years. What is to be done about it? The solution is in the hands of those who fish.

Again, while in 1924 the lobster industry showed a very slight gain after the lamentable decrease of 1923, it is figured that this year the increase, if any, will be far from satisfactory; which brings again to the front and center the question of what are we to do about our lobster fishery? And again the answer is, that the solution is in the hands of those who fish.

Winter Haddocking Fleet

This busy and daring fleet of vessels, operating from Nantucket shoals to the eastern banks, adds to its credit for the winter season of 1924-5 what is probably an acme of catch in the history of the fisheries industry of Massachusetts in this line. Also, by a peculiar twist in weather conditions, this great fleet also profited unusually well because of the fact that for the first three months, figuring from December 1, 1924, the catch was not larger than that of the preceding year, but by reason of long spells of extremely rough and stormy weather there were many days when prices ranged a maximum. With the advent of March and then up to May 1 it is safe to say that never has the Boston Fish Pier seen such an influx of fresh groundfish, practically all in prime condition, as greeted the dealers morning after morning.

Summer Fresh Fishing Fleet

The vessels operating for groundfish to land at the Boston market for table consumption and at Gloucester to be split and salted numbered about the same as the year previous. The season in this fishery covers the period from May 1 to October 1, and the fishing grounds extend from the South Channel and Georges Bank to the Middle Ground, a well-known spot in the vicinity of Sable Island.

During this past season the fleet numbered about the same as in 1924, but it is gratifying to note that the catch exceeded that of the previous season by several millions of pounds.

At the outset of the season the State Inspector of Fish suggested to owners and captains of crafts which were to engage in this fishery, that it would be better for them and the fish business as a whole if some salt were taken along in order that the results of the first few sets of the trawls might be salted down, and thus prevent fish from coming to market in a condition which would not warrant the O. K. stamp of the dealers, the buyers, or the Inspector. It was also emphasized at this same time by the State Inspector of Fish that ice should be freely used and largely carried by these vessels. Speaking from the point of co-operation, it is pleasing to note that in most cases the captains of crafts "went through" with the suggestions as made by the Inspector with the result that on landing their fares, they had little or no trouble, while others found themselves at times in difficulties. It was necessary during the season to condemn something like 200,000 pounds of fish, and but for the taking of sufficient ice and a reserve quantity of salt the amount of fish condemned this year would have been much larger. As it was, the season proved a fairly profitable one for all concerned, and fish landed were generally in satisfactory condition.

Swordfishing Fleet

This is the third year in succession in which this office is obliged, by reason of fact, to note a decline in the catch in this branch of the fisheries. Prices ranged high throughout the season. In consequence, some crafts profited well on good catches, but as a whole, facing the fishing fact of a third declining year, it would not be the part of good judgment to attempt to mark anything like "successful" against the season's total result.

The first arrival of the season at the Boston Fish Pier with swordfish was sch. Hazel Jackson, which landed 53 fish and received therefor 33 cents per pound. The landings at the Boston Fish Pier of swordfish for the season were 8,430 fish, as against 10,581 for the season of 1924. Shipments via steamer from Nova Scotia to Boston added 1,574 to the total as against 1,698 in 1924. At Edgartown 100 were brought in, while at New Bedford about 1,612 were landed as compared with 1,100 in 1924. Woods Hole showed a total of 600 fish as compared with 500 the previous year.

The Mackerel Fishery

Viewed in the light of the present and past history of Massachusetts fisheries, it can be safely said that in 1925 at least one branch not only equalled but exceeded all past records. In other words, those who were wont to prate about the "good old days" and disparage with a sneer the present-time achievements, especially in the fishing line, must for once give way; for it is written indelibly into the records, that working with a very small fleet of crafts, indeed, a fleet that in the mid-summer reached the maximum of only 91 sail, there were landed 203,961 barrels of fresh mackerel and 12,442 barrels salted, this grand total practically by the Massachusetts fleet.

In ratio of vessels and men engaged to pounds landed, you may search the records since 1804 in vain for its equal, and to many minds the most important part of all is the fact that at least 75 per cent of this entire catch was made on fishing grounds contiguous to the circuitous coastline of Massachusetts itself. In other words, this great harvest of the sea was garnered in waters in close proximity to the Massachusetts coast.

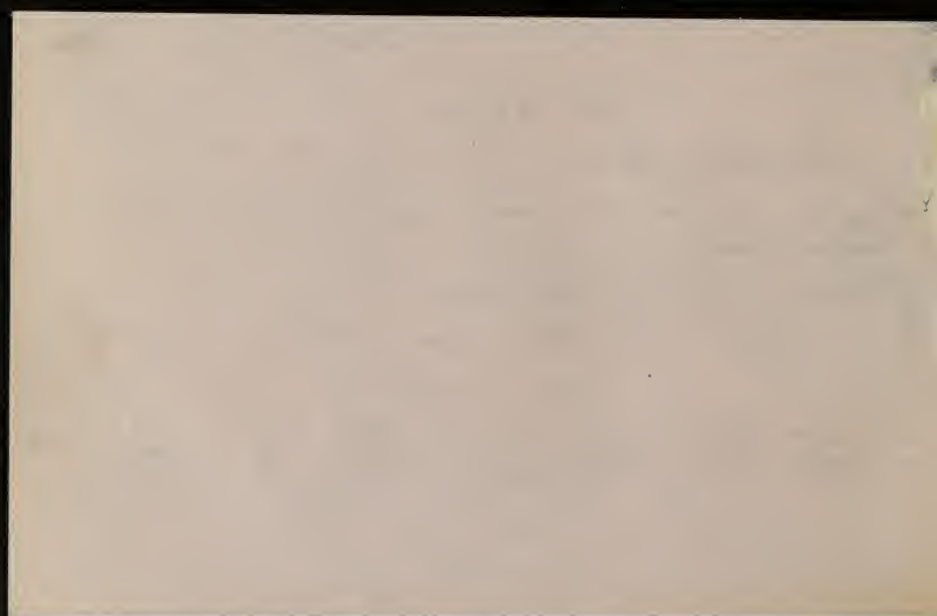
ERRATUM

Annual Report, Division of Fisheries and Game 1925

Page 49. The small salt and fresh mackerel table is incorrect, by reason of inversion of figures.

The table in correct form is as follows:

	Dec. 1, 1924 to Nov. 30, 1925	Dec., 1, 1923 to Nov. 30, 1924	Dec. 1, 1922 to Nov. 30, 1923
Salt Mackerel (bbls.)	12,442	11,000	3,864
Fresh Mackerel (bbls.)	<u>203,961</u>	<u>101,954</u>	<u>121,000</u>
	216,403	112,954	124,864



The first fares of mackerel were landed on Monday, April 13, at Cape May. These fish averaged about a pound each in weight, and were taken 35 miles south-south-east of Fenwick Island off the coast of Virginia. They were shipped rapidly to New York and Boston markets and on arrival sold at from 23c to 25c per pound. These first arrivals were quickly followed by others, and from then on the story of the southern mackerel fishery was one of marked success.

The seining fleet then headed for the "Cape Shore," otherwise the Nova Scotia coast, where the success in southern waters was duplicated. The first trip from the Cape Shore arrived in sch. Minna M., Captain Almon D. Mallock, at the Boston Fish Pier on Thursday, May 28, being twelve days earlier than the first arrival last year. The craft had 24,000 pounds of large and medium mackerel, the fare being sold at 13c per pound as against 8 and 8½ cents per pound for the first trip of the previous year. As far as known, this is the earliest record of a trip of mackerel ever arriving from the Cape Shore for market at a Massachusetts port.

Following the success of the crafts on the Cape Shore, the fleet, now being gradually increased because of the success attendant on this line of fishing, turned its attention with marked success to the fishing grounds from No Mans Land, eastward to the famous fishing ground off Nantucket Shoal Lightship and from there, in the northerly direction, over Nantucket Shoals, South Channel and Massachusetts Bay, including Middle Bank. About the middle of July mackerel began to show again in very large quantities and splendid hauls were made from South Channel and off the South Shoal Lightship. From then on until early Fall it was simply a story of the almost daily recurrence of fine catches.

On many days more mackerel were landed at the Boston Fish Pier than there were haddock and cod, and also quoted at less price. So many mackerel were brought in that it was necessary to divert some of the great influx to the wharves in Gloucester, where hundreds of men, armed with knives, split this overflow of fish fresh but a few hours out of the water and transformed them, by the use of salt, into the most splendid quality of salt mackerel that could be desired.

This in brief is the story of the most successful mackerel fishing season in the history of the fisheries when the bulk of the mackerel were taken directly off the Massachusetts coast practically for the whole season.

The Massachusetts catches of fresh and salted mackerel from December 1, 1924, to November 30, 1925, inclusive, and for the corresponding period of the two previous years, were as follows:

	Dec. 1, 1924 to Nov. 30, 1925	Dec. 1, 1923 to Nov. 30, 1924	Dec. 1, 1922 to Nov. 30, 1923
Salt mackerel (barrels)	203,961 12,442	11,000 101,954	3,864 121,000
	<hr/> 216,403	<hr/> 112,954	<hr/> 124,864

Cape Shore Catches of Mackerel for Five Years

Year	Arrivals	Fresh Mackerel (Pounds)	Salt Mackerel (Barrels)
1925	34	1,545,000	1,075
1924	24	996,000	854
1923	31	1,240,680	211
1922	48	1,353,900	2,344
1921	29	2,160,000	3,003

Fresh Halibut Fleet

It is a matter of regret and grave concern to note that the receipts of the fresh halibut fleet of the season 1925 have shown a drop from the preceding year, thus

making three years in succession in which this fleet has shown a decrease of catch yearly, following an upward tendency in five years or more.

The catch this year is 3,592,241 pounds as compared with 4,638,872 pounds in 1924, and 5,700,000 pounds in 1922, when evidently the peak of operations was reached, that is for the present era. With the exception of swordfish, halibut maintain the highest average price in Massachusetts markets of any Massachusetts-caught fish. Halibut caught on Atlantic fishing grounds from Georges to the Grand Bank are considered of finer quality than those caught in any other waters, hence the great demand for them; and it is safe to say here that taking it full and by, the demand exceeds the supply, and so has for the past few years.

Cape Cod Activities

Bright as has been the report from all Cape Cod ports of the doings of their fishing crafts for the year, this good result has been considerably dimmed by the fact that the traps as a whole did not make satisfactory catches and, by reason of severe October gales, encountered damage to netting and poles which, for a conservative figure, will take at least from fifty to seventy-five thousand dollars to repair the damage. Besides this must be figured the amount of loss of catch at a very prolific season of the year when the traps were out of commission. The catches of the traps in a great measure regulate the stock in the Cape Cod freezers, so it is safe to say that the amount of frozen fish on hand in these receptacles for the winter trade is less than the previous year.

At Provincetown, as far as the boats, netters and seiners were concerned, it was one of the best. The mackerel netters operated with marked success, and landings were heavy from June 1 to the middle of July. Butterfish at the opening of the season were scarce and brought high prices. Whiting were abundant and the catch to the middle of July was ahead of the total of all last season when these fish struck in late. This year they came in early. A few porgies were taken, and these were of large size. The trap catch of mackerel, even from the opening of the season, was disappointing.

The traps at Provincetown and Truro took about 25 horse mackerel or bonito during the whole season, and an encouraging sign is that some small bluefish weighing from 2½ to 3 pounds were caught by some of the drag netters. At Provincetown during the last winter season the flounder boats operated to good advantage. As has been usual for the past few seasons, a sizable fleet operated on the offshore grounds where sea scallops were taken in goodly quantities.

The traps at Barnstable had a decidedly poor season. The total catch was not more than one-half that of the previous year, and practically no other food fish than mackerel were taken. Several fair catches of butterfish were made in the traps at Truro and Wellfleet during the season and also some good catches of butterfish were made by the seiners.

Chatham fared much better than most of her sister ports along the Cape as far as fishing success was concerned for the year, doing indeed better than the previous year, which was considered a good one. Squid struck in early and in very plentiful quantities along the shore and sold at good prices. Herring were plentiful and sold generally cheaply. Large mackerel were more plentiful than the previous year, especially for the gill netters. Small mackerel were scarce on this side of the Cape, but butterfish were present in far greater quantities than the previous year and brought fine prices. Scalloping was much better than last year, but the prices have ranged lower.

To the westward of Harwich the traps did well on squid, but mackerel and butterfish were not as plentiful as at Chatham. At Hyannis the mackerel netters' catch was very small, so much so that some of these netters abandoned the fishery off that port and came up to Chatham to fish their nets.

The fisheries at Hyannis were pursued as usual, the flounder fishing predominating until the ice came, then the fleet moved to Provincetown waters to resume operations. Quite a lot of mackerel were taken in the spring and the scallop fishery in the fall was better than for the past four years.

Buzzards Bay

The story of Buzzards Bay fishing this year is one, as far as the reports received at this office show, of increased catches of fish of several species. In the first place the traps did better than the year previous, the fish taken being mackerel, tautog, scup, herring, sea bass, whiting, hake, flounders, menhaden, squeteague and butterfish. A greater amount of mackerel than any other kind of edible fish were caught.

Handlining in the Bay this year could certainly be considered good, the fish taken being mostly scup, bass and tautog. The traps in the Sound, that is, just outside the Bay, were in operation from April 30 to October 10, while the traps in the Bay were catching fish from May 15 to September 1. It is considered by the fishermen that those traps set in the Sound did better than those in the Bay. It is very interesting to note here that quite a lot of bluefish were taken by handline in the Bay.

The New Bedford report is to the effect that during the spring and summer about 1,600 barrels of mackerel were landed there, possibly 75% of which were seined fish. A great bulk of these fish naturally came from outside Buzzards Bay. A total of 1,612 swordfish were landed and six or eight, which were jellied, were condemned. A considerable amount of flounders and some groundfish were landed by the flounder dragging fleet.

Marthas Vineyard

At Edgartown the season for the shore boats was the poorest for a number of years. Flounders were scarce except for the usual school of yellow tails on the fishing ground off Muskeget channel buoy. Mackerel through May and June were quite plentiful, but prices were so low that the fishermen realized but little. Few swordfish were taken within twenty miles of the land. About 100 were landed at Edgartown in all for the season. Bluefish and sea bass were very scarce. Scup also were not plenty, the catch being about three-fourths of the average of the last few years.

Alewives were more plentiful than for the last two years, the catch last spring going about 4,000 barrels as against about 3,000 barrels for each of the two preceding seasons.

The report to the westward of Edgartown, up to Menemsha and Gay Head, shows the spring codfishing about on the average with other years and a fairly good run of pollock during May. The traps in the Sound also had a better spring catch of scup than had been the case for many years, although these desirable fish did not run long. They were quite plentiful when they first struck in, bringing 10 to 12 cents per pound at the traps, which is indeed a very good price. Mackerel ran very plentifully with a correspondingly low price; so low in fact that some of the boats had to quit fishing as the price of 2 cents per pound was not very alluring.

Swordfish, inshore, were very scarce, practically all the fishing being done by the boats from 25 to 40 miles off. Otter trawling for summer flounders or "flukes" was better than common. The fall run of codfish was exceptionally good. With the opening of the fall and winter season this year, otter trawling for flounders has been fair and prices good.

Nantucket Fisheries

Nantucket has had a fairly successful fishing year. The winter of 1924-25 was very open and the otter trawl fishery for flounders was consequently very good up to March. During the winter prices were good but dropped in the spring. During April, May and June, the spawning months for these fish, catches were very large and the fares were "run through" to the New York market in excessive quantities, with the result that prices dropped to almost nothing and it was necessary for many of the boats to go outside and dump the major portion of their trips, a situation which is a sad commentary upon the fisheries and business judgment of those engaged in the fishery.

There were packed at this port for shipment, mostly to the New York market, from December 1, 1924, to November 30, 1925 — 20,725 barrels of fish, 200 pounds

net, the great bulk of the catch being flounders, and probably an equal amount, if not more, was "taken through" direct to the New York market by the fleet which makes Nantucket its fishing headquarters. This report includes flounders, cod and haddock and flukes. More flukes were taken this year than last, but prices ranged somewhat lower. Trap fishing this year was not very good. During the severe gales in October a great many scallops were washed ashore around the harbor, a lot of them seed, as well as many large ones.

The fishermen are talking a lot, as they have for the past two or three seasons, about giving up catching any flounders during the months of April and May on account of this being the spawning season, as well as the fact that at this time the New York market is so low that the bulk of the catches carried through and landed there have to be dumped overboard, while those sold bring such small prices that it is impossible to make a paying voyage. While nothing definite has been decided upon, it can be emphatically said that it is a shame that this practice should be allowed to continue, and it is to be hoped that the fishermen themselves will see to it that some action is taken looking to a close time during the spawning season.

Boston Fishing Activities

It is the opinion of fish experts who are qualified to judge, that the fish landings from vessels at the Boston Fish Pier for the year ending November 30, 1925, were the largest in the history of the port, totalling nearly 152 million pounds.

The immense amount quoted above does not adequately express the amount of fish handled yearly in the Boston fish mart. Millions of pounds landed by small crafts of less than the United States enrollment limit of 5 tons can be added, and also more millions of pounds coming through from Nova Scotia and New Brunswick; from the far-off Pacific coast ports, Prince Rupert and Vancouver, and also from the many ports along our own coast from Eastport to Menemsha bight.

In the opinion of the Inspector of Fish, the following résumé, written as usual for this report by Frederick F. Dimick of the Boston Fish Bureau, tells the whole story in brief but incisive paragraphs. As Mr. Dimick is an authority of highest standing on these matters this office deems itself fortunate to receive, in advance of his own annual report, this fish story. Mr. Dimick says:

"Dealers have done a good business during the year 1925. There is much competition, and expenses of doing business are large and profits have been moderate. Although the catch of mackerel was 100 per cent larger than last year, many of these fish were turned over at little or no profit.

"The catch of groundfish shows a gratifying increase, and was one of the factors that contributed to the good business. The demand for fillets of haddock, which has been increased by the efforts of the dealers, has contributed to the activity of the fish trade. Haddock, which comprise about 50 per cent of the receipts of groundfish direct from the fishing fleet, are used mostly in making fillets.

"The receipts of swordfish, both foreign and domestic, were disappointing, owing to the light catch of these fish, and the high prices that prevailed throughout the season.

"The flounder business has expanded, and a number of new vessels have been added to this fishery. They are known as 'baby trawlers,' and fish from Nantucket to Cape Cod, and sometimes go to Georges Bank. They land a great variety of flat fish, and there is a growing demand for these fish.

"Halibut and salmon have been in good supply from the West Coast.

"Receipts from Cape Cod, which have in past years contributed a large supply of fish to this market, have been light.

"Owing to the good catch of mackerel and groundfish by the home fishermen the receipts of fish from Nova Scotia during the past year have been light.

"In a few instances some big stocks have been made by fishing vessels. Good stocks were made by many mackerel vessels, but those of the groundfish vessels have been about the average."

*Receipts of Fish at Boston Direct from the Fishing Fleet from December 1, 1924, to
November 30, 1925*

	Pounds
Large Codfish	26,687,139
Market Codfish	9,887,809
Cod Scrod	95,545
Haddock	62,849,703
Scrod Haddock	13,802,680
Hake	1,593,445
Small Hake	3,216,460
Pollock	2,592,287
Cusk	1,955,515
Halibut	2,850,129
Mackerel	18,369,203
Miscellaneous	7,962,672
Total	151,861,587

The Gloucester Fisheries

No better illustration of the come-back spirit, ingrained in the fisherman and fish dealer, can be exemplified than in the recent advance of the grand old fish port of Gloucester, which started fishing and in the fish business by authenticated record in 1623. The total landings figure of some 62 million pounds in 1923, following the heavy financial losses that the fish dealers stood for after the signing of the Armistice, rose to a 65 million total in 1924, and now this game old fish place is smirking with satisfaction on a figure total for 1925 of 80 million pounds.

Gloucester is going deep into the canned and prepared lines of fish food and is meeting with marked success. It is also an encouraging sign that the number of vessels going from the port is gradually increasing.

But one craft from this port this year engaged in the salt bank fishery, this craft going dory handlining. There were no line trawlers engaged in the salt bank fishery.

The Newfoundland herring fishery, which was for years pursued from this port to bays of the coast of Newfoundland by fleets of from 30 to 50 vessels each fall and winter season, and then practically went out of existence as a Massachusetts conducted fishery, has of late shown marked signs of rejuvenation and the demand for the smoked "bloater" herring and frozen herring is noticeably increasing.

The following table gives the landings of fish at this port from December 1, 1924 to November 30, 1925:

	Pounds
Salt Cod	3,829,358
Fresh Cod	26,459,892
Halibut	332,067
Haddock	14,971,103
Hake	1,471,320
Cusk	968,580
Pollock	2,457,847
Flitched Halibut	—
Not product of American Fisheries	10,602,077
Fresh Mackerel (Pounds)	6,448,191
Salt Mackerel (Barrels)	22,664
Fresh Herring (Pounds)	1,269,000
Salt Herring (Barrels)	8,140
Salt Bulk Herring (Barrels)	12,242
Cured Fish (Quintals)	23,179
Miscellaneous (Pounds)	1,740,666

Total December 1, 1924, to November 30, 1925 — 80,599,853 pounds.

SHORE FISHERIES

Summary of the reports of the shore net and pound fisheries as required by Sec. 148, Chapter 130, G. L.

Number of men engaged, 185; number of boats, 153; value of boats, \$37,631.00; number of fish pounds, 52; value of fish pounds, \$73,250.00; number of nets, 550; value of nets, \$10,005.00; catch in pounds: 6,733,437.

Alewives, 460,114
Bluefish, 2,211
Flounders, 105,981
Mackerel, 1,695,455
Menhaden, 44,659
Pollock, 132,979
Salmon, 62
Scup, 94,171

Sea bass, 4,256
Sea herring, 29,588
Shad, 6,525
Squeteague, 286
Striped bass, 147
Squid, 1,195,575
Tautog, 28,926
Other edible or bait species, 2,932,502.

Total pounds 6,733,437; total value \$155,482.46.

THE LOBSTER FISHERY

Returns from questionnaires sent to the various wardens covering the shore line of the State would give indication that the catch of lobsters for 1925 would show an increase over the preceding season. Three of the 13 sections indicate a normal catch, while five report a catch above the average and five report a catch below the average. With but one exception all the districts reported the weather throughout the season as favorable, and there was little or no damage to fish gear.

The consensus of the thirteen reports is that unquestionably more "shorts," that is, lobsters below the legal length, were found by the lobstermen than during the previous season, while the various sections of the coast, as per the report, show a considerably divided opinion as to the presence of more or less seed lobsters. As to whether the crustaceans caught ran larger or smaller than usual, six of the divisions report them as running larger, while four reported them as running smaller, with three stating it to be of the average size. No particular points were brought out by the questionnaires beyond those above mentioned.

During the spring, from Nova Scotia shipments, there were seized at Boston, 14,282 short and 5 egg-bearing lobsters, all of which were distributed on favorable lobster locations along the whole State coast.

The totals of the tabulation of the returns of the year's fishing, required of the lobstermen by law, follow. The period covered is October 20, 1924, to October 20, 1925:

Number of men engaged in the fishery, 507; number of boats, 661; value of boats, \$175,589.00; number of pots used, 39,033; value of pots, \$103,898.00; number of lobsters taken, 1,048,811; pounds of lobsters, 1,573,207; value of lobsters, \$397,279.57; number of egg-bearing lobsters taken and returned to the waters, 12,655.

As required by Chapter 130, Section 106, General Laws, it is hereby reported that the number of lobster licenses issued in 1925 was 1,095.

BOUNTIES ON SEALS

The following towns were reimbursed by the Commonwealth for bounties paid on seals under Chapter 130, General Laws, Section 155; Barnstable, \$2; Duxbury, \$88; Essex, \$14; Georgetown, \$2; Lynn, \$4; Nahant, \$2; Newburyport, \$4; Plymouth, \$8; Quincy, \$4; Revere, \$8; Yarmouth, \$84; fees to treasurers, \$55.

MOLLUSK FISHERIES

The biological department, assisted by the wardens, made the usual annual survey of the mollusk fisheries, details of which are in the office files. Practically no change in conditions is shown since last year.

Clam

Statistics and information obtained from the clam diggers and those engaged in the industry reveal the fact that the production in all sections of the State, with the exception of possibly the North Shore, Nantucket and Barnstable, averaged fair, and in most sections it was extremely poor.

The lease of the clam flats of Newbury from the Commonwealth to the town, under Chapter 710, Acts of 1912, was renewed for ten years.

Oyster

Little that is new can be said of the oyster industry in the districts from which they are taken. A normal year was reported in a general way by those engaged in the business. The production and prices ranged about the same as in 1925. The town of Wareham is reported to have sold 22,000 bushels of one to three-year-old seed oysters during the year.

Quahaug

Data collected from quahaug diggers and persons engaged in the business commercially show a prosperous season in almost all sections in which quahaugs are dug. Prices in general remained about the same as last year, averaging from \$6 to \$12 per barrel wholesale, depending on the section from which they were taken.

Scallop

A prosperous year was reported from most of the towns in which scallops were taken, prices ranging from \$2.25 to \$4.50 per gallon.

Contaminated Shellfish Areas

The legislature of 1925 made provision, by Chapter 300, for a systematic examination of the shellfish areas of the State with respect to the fitness of shellfish taken therefrom for use as food. The act took effect at once, to remain in force only until June 1, 1926, but while in operation all acts inconsistent with its provisions are inoperative. It authorizes and directs the Department of Public Health to examine the tidal waters and flats, and samples of the shellfish therein, to mark contaminated areas, and to give publicity thereto. A penalty is provided for taking, transporting or possessing any shellfish whatever from such areas without written approval of the Commissioner of Public Health; the provisions of the act to be enforced by the wardens of this Division and all other officers authorized to make arrests. Between the passage of the act and the close of the year this Division was notified that the waters and flats of Newburyport Harbor, the Merrimack River and the estuaries tributary thereto are contaminated and the shellfish obtained therefrom are unfit for food and dangerous to public health. Examination of the rest of the shore is in progress.

ALEWIFE

Work for the welfare of the alewife fisheries was conducted in the usual way, namely, by pushing forward the work of opening all streams from headwaters to sea by installation of fishways where needed, and keeping in proper working order the existing ways, together with checking up the alewife runs in every stream in the spring (see Fishways); by stocking barren streams with spawning alewives; and by the usual annual survey of the industry from a commercial point of view.

This survey showed a decided increase in the catch in 1925 over that of 1924. This was true in the case of 17 streams out of the 51 concerning which statistics were obtained. In several streams where seining and fishing rights are usually sold, the selectmen voted not to sell them this year, and all the fish (except a few allowed the townspeople for home consumption) were allowed to run to the spawning beds. The sale of alewives caught during the run was obtained and recorded wherever possible. For most fisheries operated commercially, prices ranged from 50c to \$4 per barrel; in most cases considerably higher than in 1924.

In the work of transplanting alewives, two separate headwaters of the Taunton River system (one to the east and one to the west) were stocked during the spring run, making the fifth year of such plantings in this system.

In Monponsett Lakes, Halifax, were planted 115 alewives from the Old Gorman Mill Site, Pembroke, and 1,781 from Barker River, Pembroke.

In Lake Nippenicket, Bridgewater, were planted 1,509 alewives from the Taunton River, East Taunton.

In the pond above the Carver Cotton Gin Company, East Bridgewater, were planted 129 alewives from the Taunton River, East Taunton.

In the Ipswich River above the dam at Ipswich Mills were planted 1,750 alewives from Chebacco or Mill Brook, Essex.

Careful observations were made to ascertain whether any young alewives resulted from these plantings.

In the Ipswich River none were seen.

In Monponsett Lakes and in Lake Nippenicket young alewives in abundance were seen during the summer (particularly in the former), and even as late as September 16 they were noticed, some having reached four to six inches in length. At Lake Nippenicket the alewives transplanted did not school and spawn as quickly as did those in Monponsett, due to the fact that they were of a different run and probably unrelated.

On the Nemasket River, Middleboro, large numbers of young alewives were seen during the fall above the dam on Wareham Street.

In Red Brook (White Island Pond) large numbers of young alewives were seen returning downstream in the fall.

Respectfully submitted,

WILLIAM C. ADAMS, *Director*.

APPENDIX

RECOMMENDATIONS TO BE CONTAINED IN THE SIXTIETH ANNUAL REPORT OF THE
DIVISION OF FISHERIES AND GAME FOR THE YEAR 1925

The Director respectfully recommends the passage of laws designed to accomplish the following purposes:

1. *Relative to the Salary of the Director.* — Owing to the steady growth in the volume of business in this division it is the opinion of the Commissioner that the Director is not receiving a salary commensurate with his duties and responsibilities. The Commissioner, therefore, recommends that the salary be increased.

2. *Relative to Fishing in Inland Waters.* — Today no license is required to fish in ponds or streams not stocked subsequent to January 1, 1910. While the greater number of ponds and streams have been so stocked, the law requires the publication yearly of a list of stocked waters at the expense of considerable effort and money for their compilation and publication. If the Commonwealth has expended substantial sums to stock ponds prior to January 1, 1910, from which our fishermen are now receiving benefits, there is no logical reason for permitting these ponds to be fished without the purchase of a license. This requirement of law leads to considerable confusion and serves no practical purpose and should therefore be repealed.

3. *Relative to the Taking of Pickerel.* — The penalty for illegally taking pickerel is now fixed at one dollar whereas other species are protected by a minimum fine of ten dollars. As pickerel cannot be artificially propagated and must be maintained through the medium of protection it is essential that an adequate and uniform penalty be prescribed by means of which protection can be enforced.

4. *Relative to Fishing Tackle.* — At the present time a person is entitled to use ten traps for fishing through the ice. The principal fish taken in fishing through the ice is the pickerel. It begins to congregate on the breeding grounds early in the period when the ice forms, and remains in these localities until the spawning season, which starts about the time the ice leaves the ponds. These areas are well known to the fishermen and for that reason the ponds are more intensively fished during this period than at any other in the year. Our investigation shows that 90 per cent of the pickerel taken through the ice are female fish containing spawn. We are not able to artificially propagate the pickerel and must rely on natural reproduction to keep up the stock in our ponds. The reduction of the ice fisherman's gear by 50 per cent will be a partial correction of the great destruction of pickerel which takes place during the period that our ponds and streams are covered by ice. This contemplated change in the law will have little effect on the summer fisherman.

5. *Relative to Lobster Fishing.* — This act provides a penalty on the fisherman who dumps or destroys lobsters or receptacles containing them after he has been ordered by a warden to halt and display the lobsters in his possession. Wardens are seriously handicapped because of the fact that fishermen dump illegal lobsters when in danger of apprehension. In no other way can this practice be adequately stopped.

6. *Relative to Search and Seizure Under the Law Respecting Fish and Game.* — Under existing law no officer of the Division can obtain from any of our judges a warrant to search a dwelling house in order to obtain evidence of a violation of the fish and game laws. Short lobsters may be taken, and fish, birds, and quadrupeds illegally killed, and if they can be gotten into a dwelling house they are safe from pursuit and the violators cannot be apprehended with their quarry. Unless our officers can have the use of search warrants under such conditions, with suitable safeguards to prevent any unreasonable violations of the right of privacy,

it will continue to be extremely difficult, if not impossible, to stop many persistent violations of the fish and game laws.

7. *Relative to Lobster and Crab Fishing.* — At the present time no license is required to set traps for the purpose of catching crabs. Yet the traps used in this fishery will take lobsters, for the taking of which a license is required. Unless this law is extended to cover the taking of crabs it will be impossible to enforce the lobster license law as it should be enforced. This act will also impose a penalty upon any person who obtains a lobster fisherman's license by making false representations.

8. *To Reduce the Fee for a Sporting License Issued to Non-Residents of the State.* — It has become apparent that dissatisfaction has arisen over the fees charged to non-residents for both the straight sporting license and the special non-resident sporting licenses as they were established by the last General Court. The accompanying bill is submitted without any specific recommendation as to the proper fees to be charged for these classes of licenses in order that the matter may be opened for discussion and all parties given an opportunity to present their views.

9. *Relative to the Training of Hunting Dogs.* — Under the present law dogs cannot be trained on any protected species of birds or game between March 1 and September 1. This law does not prohibit the taking of fox hounds into the woods during this time or other dogs under the guise of hunting unprotected game. This serves to defeat the purposes of the law, i. e. to protect birds and game from disturbance during the breeding and nesting season and during the time when the young stock is practically helpless. Unless the wild life is free from all disturbance during this time the best results of conservation cannot be accomplished and for that reason it is recommended that the law be amended so as to prohibit the training or running of all dogs during the time above mentioned.

10. *To Amend the Law Relative to Deer.* — When the laws were recodified the phraseology used in the deer law was such as to create a doubt as to what its real intent was concerning the possession of deer in the close season. This recommendation is to clarify the law on this point and to establish a law which can be enforced.

11. *To Provide a Close Season on Ruffed Grouse in Dukes County.* — The decrease of ruffed grouse in this county has become apparent and the only way in which the decrease can be stopped and the birds restored in goodly numbers is through the medium of a close season of sufficient duration to re-establish them securely. That this can be done is demonstrated in the case of quail, which have become plentiful in this county as a result of a close season of several years with the result that an open season on quail in that county was possible this year.

12. *Relative to Hunting on State Reservations.* — A law was passed at the last session of the General Court allowing the Commissioner of Conservation to declare an open season on deer in state forest reservations but with the provision that authorization to hunt on such reservations should be by written permit. When the time came to declare such an open season it became immediately apparent that such a method was not practical and that all persons holding a sporting license should be allowed to hunt on such reservations if such an open season was declared. The purpose of this act is to eliminate the requirement of written permits for this form of hunting.